IPRenewal NPEmails

From: Nancy Decker <ndecker@asaac.com>
Sent: Thursday, April 21, 2016 10:08 AM
To: Wentzel, Michael
Cc: Dara Gray
Subject: [External_Sender] Unlocked files for Year Class Reports
Attachments: 2013-Appendix B.pdf; 2013-Appendix E.pdf; 2013-Appendix F.pdf; 2013-Appendix G.pdf; 2013-Chapter 1.pdf; 2013-Chapter 3.pdf; 2013-Contents.pdf; 2013-References.pdf; WELCOME.pdf

Michael,

Dara Gray asked me to pass along to you the unlocked files for the 2013 and 2014 Year Class Reports. Some of the files are large so I will send them in multiple emails. For each year, I will send 5 emails, for a total of 10 emails. The Appendix A files were locked by another contractor which I mentioned to Dara. Please let me know if you encounter any difficulties.

Nancy Decker

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Mail Envelope Properties (BLUPR0201MB142556BFF3044F5386CA725DB46E0)

Subject: [External_Sender] Unlocked files for Year Class Reports
Sent Date: 4/21/2016 10:08:05 AM
Received Date: 4/21/2016 10:08:28 AM
From: Nancy Decker

Created By: ndecker@asaac.com

Recipients:
"Dara Gray" <dgray@entergy.com>
Tracking Status: None
"Wentzel, Michael" <Michael.Wentzel@nrc.gov>
Tracking Status: None

Post Office: BLUPR0201MB1425.namprd02.prod.outlook.com

Files	Size	Date & Time
MESSAGE	580	4/21/2016 10:08:28 AM
2013-Appendix B.pdf	335274	
2013-Appendix E.pdf	455045	
2013-Appendix F.pdf	377954	
2013-Appendix G.pdf	168584	
2013-Chapter 1.pdf	77762	
2013-Chapter 3.pdf	426570	
2013-Contents.pdf	187540	
2013-References.pdf	22415	
WELCOME.pdf	68769	

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Priority: Standard
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Appendix B

Physical/Chemical Parameters

APPENDIX B

LIST OF TABLES

APPENDIX B

LIST OF TABLES (CONTINUED)

Table B-1 Daily Freshwater Flow (m^3/sec/day) Estimated for Green Island, New York, 2013

DAY OF MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT[1]	NOV[1]	DEC[1]
1	397	1022	467	506	382	628	1128	183	160	119	255	436
2	369	705	415	507	360	583	1259	181	228	128	575	403
3	324	571	354	467	340	678	1539	212	293	121	510	413
4	369	457	311	430	302	556	1296	220	288	127	428	347
5	383	425	296	396	301	465	1056	203	213	185	356	373
6	373	407	282	371	274	461	920	215	180	241	327	522
7	370	381	241	356	262	550	815	188	167	360	328	589
8	355	360	230	302	261	869	891	190	159	433	366	531
9	342	358	228	378	253	813	936	198	153	398	298	431
10	354	355	249	640	231	643	894	246	152	228	366	400
11	355	381	299	1245	238	1505	776	239	170	251	453	368
12	366	408	439	1259	242	1958	605	208	302	213	417	302
13	399	401	1339	1418	247	1788	584	239	378	174	391	238
14	577	385	1053	1118	231	2875	532	361	369	172	458	256
15	742	373	764	920	216	2011	442	313	258	183	353	242
16	631	365	606	764	199	1392	343	180	225	189	307	313
17	566	347	519	832	172	1066	331	167	288	221	316	280
18	489	294	468	872	171	778	358	169	157	243	366	299
19	426	262	436	812	160	721	332	161	184	223	445	286
20	385	286	439	1316	152	634	369	156	157	222	492	333
21	371	266	423	1523	204	532	329	147	161	255	396	452
22	327	242	410	1166	447	472	309	151	180	212	337	877
23	293	237	403	843	682	428	462	147	173	193	311	1123
24	267	244	424	681	504	399	553	148	159	181	285	1007
25	240	239	439	554	897	474	365	140	158	161	264	744
26	261	261	450	662	1191	513	329	140	159	164	368	584
27	250	278	473	545	929	621	295	150	130	178	384	548
28	229	378	487	512	688	1168	284	145	135	171	662	521
29	217	NA	489	429	650	1765	308	149	129	181	606	489
30	262	NA	481	422	1163	1191	294	145	130	185	497	575
31	725	NA	494	NA	877	NA	230	157	NA	195	NA	521

[1] October through December data are provisional.

Table B-2 Long-Term (1947-2012) and 2013 Monthly Mean Freshwater Flow (m^3/sec/day) Estimated for Green Island, New York

MONTH	2013 AVERAGE	LONG-TERM AVERAGE	LONG-TERM MINIMUM	LONG-TERM MAXIMUM
JAN	388	410	118	961
FEB	382	399	128	885
MAR	465	635	258	1,077
APR	742	864	257	1,749
MAY	427	526	156	1,147
JUN	951	303	101	909
JUL	618	201	87	670
AUG	189	179	48	480
SEP	200	193	58	897
OCT	210	279	71	853
NOV	397	387	93	758
DEC	478	441	173	989
ANNUAL AVERAGE[2]	453	401		

[1] October through December data for 2013 are provisional.
[2] Weighted by number of days in each month. 2013 average is provisional.

Table B-3 Monthly Mean Freshwater Flow (m^3/sec/day) Estimated for Green Island, New York, 1974 to 2013

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
JAN	623	540	417	225	744	571	256	148	321	259	133	439	310	262	268	196	383	512
FEB	527	548	885	227	400	335	128	851	356	352	552	319	362	201	349	256	703	496
MAR	587	670	897	987	619	1,077	633	349	613	580	281	581	1,018	605	461	332	994	696
APR	854	724	1,040	1,092	950	1,009	748	384	897	1,062	761	456	689	981	476	548	894	655
MAY	650	566	900	421	530	508	274	328	354	1,036	651	232	363	156	357	620	990	346
JUN	249	367	431	207	282	216	192	169	431	358	275	157	428	175	123	389	250	144
JUL	333	211	432	162	131	131	144	140	182	127	127	133	250	162	131	92	157	112
AUG	180	254	414	154	169	149	130	133	124	155	48	104	350	118	139	61	248	123
SEP	294	482	271	408	175	221	118	233	122	133	58	171	218	341	164	120	159	136
OCT	256	662	658	853	244	313	158	456	124	71	178	206	336	504	211	254	477	216
NOV	486	637	507	663	227	465	242	393	196	224	277	423	544	453	565	407	653	301
DEC	548	532	398	749	303	430	273	319	233	624	447	338	524	437	330	180	687	364
ANNUAL AVERAGE	466	516	604	512	398	452	275	325	329	415	316	296	449	366	298	288	549	342

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
JAN	304	550	239	490	736	465	922	426	417	291	168	331	488	624	814	849	645	421
FEB	236	276	337	263	503	516	437	473	473	346	423	279	297	391	634	331	710	345
MAR	408	453	562	514	461	683	873	584	861	413	540	914	651	456	491	825	1,032	841
APR	648	1,749	1,375	257	939	873	652	593	1,069	1,375	693	833	676	1,059	566	1,240	1,203	644
MAY	501	375	534	158	1,081	643	349	214	898	341	652	621	526	385	553	496	385	429
JUN	342	203	233	130	353	180	550	115	573	451	483	413	298	301	909	195	204	423
JUL	254	136	248	94	384	153	243	142	314	195	152	188	259	214	670	151	333	343
AUG	203	140	265	97	191	126	153	84	393	105	112	332	399	126	257	114	331	400
SEP	217	158	190	102	185	127	133	257	228	116	138	257	452	161	187	110	173	219
OCT	286	192	177	361	288	133	169	266	264	115	248	533	222	683	569	211	313	446
NOV	531	347	251	693	613	293	190	280	309	163	525	736	350	758	752	427	483	502
DEC	438	403	396	328	989	268	187	298	469	220	406	846	759	639	584	472	750	483
ANNUAL AVERAGE	364	415	401	291	560	372	405	311	522	344	378	524	448	483	582	452	547	458

Table B-3 (Continued)

	2010	2011	2012	2013	Minimum	Maximum	Average
JAN	418	326	520	387	133	922	436
FEB	341	270	381	382	128	885	412
MAR	1,006	925	476	465	281	1,077	660
APR	591	1,236	263	742	257	1,749	837
MAY	233	1,000	519	427	156	1,081	515
JUN	247	489	297	951	115	951	330
JUL	209	268	126	618	92	670	221
AUG	250	480	131	189	48	480	198
SEP	161	897	137	200	58	897	216
OCT[1]	762	641	363	210	71	853	341
NOV[1]	620	528	338	397	163	758	444
DEC[1]	601	673	461	477	180	989	472
ANNUAL AVERAGE	453	644	334	454	140	943	423

[1] October through December data for 2013 are provisional.

Table B-4 Average Annual Freshwater Flow (m^3/sec/day) Estimated for Green Island, New York, 1947 to 2013

YEAR	FLOW	YEAR	FLOW
1947	457	1981	325
1948	366	1982	329
1949	350	1983	415
1950	398	1984	316
1951	479	1985	296
1952	432	1986	449
1953	395	1987	366
1954	408	1988	298
1955	414	1989	288
1956	393	1990	549
1957	273	1991	342
1958	363	1992	364
1959	401	1993	415
1960	397	1994	401
1961	304	1995	291
1962	299	1996	560
1963	266	1997	372
1964	247	1998	405
1965	219	1999	311
1966	285	2000	522
1967	316	2001	344
1968	353	2002	378
1969	377	2003	524
1970	337	2004	448
1971	420	2005	483
1972	595	2006	582
1973	493	2007	452
1974	466	2008	547
1975	516	2009	458
1976	604	2010	453
1977	512	2011	644
1978	398	2012	334
1979	452	2013[1]	454
1980	275		

[1] Data for 2013 are provisional.

Table B-5 Mean, Minimum, And Maximum Temperature (°C) for Each Day of the Year, Hudson River near Poughkeepsie, 1951 to 2013[1]

		LONG-TERM TEMPERATURE (1951-2012)			2013 ACTUAL
MONTH	DAY	MEAN	MINIMUM	MAXIMUM	TEMPERATURES
1	1	1.4	0.0	4.4	2.1
1	2	1.4	0.0	4.4	1.8
1	3	1.4	0.0	4.4	1.6
1	4	1.3	0.0	3.5	1.5
1	5	1.3	0.0	3.5	1.3
1	6	1.1	0.0	4.0	1.3
1	7	1.1	0.0	3.5	1.2
1	8	1.1	0.0	4.0	1.1
1	9	1.1	0.0	3.5	0.9
1	10	1.1	0.0	3.5	0.9
1	11	1.0	0.0	3.5	0.8
1	12	1.0	0.0	4.0	1.0
1	13	1.0	0.0	4.0	1.0
1	14	1.0	0.0	4.0	1.1
1	15	1.0	0.0	4.0	0.9
1	16	1.0	0.0	3.5	0.8
1	17	0.9	-0.1	2.8	0.9
1	18	0.9	0.0	3.3	0.9
1	19	0.9	0.0	2.8	1.0
1	20	0.8	0.0	2.2	1.1
1	21	0.8	-0.1	2.4	1.1
1	22	0.8	-0.1	2.2	0.8
1	23	0.8	-0.1	3.0	0.6
1	24	0.8	-0.1	3.0	0.5
1	25	0.8	-0.1	3.5	0.5
1	26	0.8	-0.1	3.5	0.4
1	27	0.8	0.0	3.0	0.4
1	28	0.8	0.0	3.0	0.4
1	29	0.7	-0.1	2.5	0.4
1	30	0.8	0.0	2.5	0.5
1	31	0.8	0.0	2.5	0.8
2	1	0.8	-0.1	2.5	0.3
2	2	0.8	-0.1	2.2	0.3
2	3	0.8	0.0	2.2	0.3
2	4	0.7	0.0	2.0	0.3
2	5	0.7	0.0	2.0	0.3
2	6	0.8	0.0	2.5	0.3
2	7	0.7	0.0	2.5	0.3
2	8	0.8	0.0	3.0	0.3
2	9	0.8	0.0	3.0	0.2
2	10	0.8	0.0	3.3	0.2
2	11	0.8	0.0	3.0	0.2
2	12	0.8	0.0	2.5	0.4
2	13	0.8	0.0	2.5	0.3
2	14	0.9	0.0	2.8	0.3
2	15	0.9	0.0	2.8	0.3
2	16	0.9	0.0	2.8	0.3
2	17	0.9	0.0	2.8	0.2
2	18	0.9	0.0	2.8	0.2
2	19	0.9	0.0	2.8	0.2
2	20	0.9	-0.1	2.8	0.3
2	21	1.0	-0.1	2.8	0.3
2	22	1.0	-0.1	3.9	0.2
2	23	1.0	-0.1	2.8	0.3
2	24	1.0	0.0	3.9	0.4
2	25	1.0	0.0	2.8	0.4
2	26	1.1	0.0	3.3	0.5
2	27	1.2	0.0	4.4	0.8
2	28	1.3	0.0	5.0	0.8
2	29	1.5	0.0	4.4	
3	1	1.2	0.0	4.4	0.9
3	2	1.3	0.0	4.4	1.0
3	3	1.2	0.0	3.9	1.2
3	4	1.3	0.0	3.5	1.4
3	5	1.4	0.0	3.5	1.7
3	6	1.5	0.0	4.0	1.8
3	7	1.5	0.0	4.7	1.8
3	8	1.6	0.0	4.9	1.7
3	9	1.7	0.0	4.5	2.0
3	10	1.7	0.0	4.8	2.1
3	11	1.8	0.0	4.4	2.3
3	12	2.0	0.0	4.4	2.9
3	13	2.1	0.0	4.7	3.1

[1] Data from 1951 through 1992 from Poughkeepsie's Water Treatment Facility. Data from 1993 through 2013 from USGS gaging site 01372058 Hudson River below Poughkeepsie, NY.

Table B-5 (Continued)

MONTH	DAY	LONG-TERM TEMPERATURE (1951-2012) MEAN	MINIMUM	MAXIMUM	2013 ACTUAL TEMPERATURES
3	14	2.2	0.0	5.0	3.4
3	15	2.3	0.0	5.3	3.4
3	16	2.4	0.0	5.6	3.3
3	17	2.5	0.0	5.8	3.4
3	18	2.6	0.0	6.3	3.3
3	19	2.7	0.0	7.7	3.2
3	20	2.9	0.0	7.5	3.2
3	21	3.0	0.0	7.8	3.3
3	22	3.1	0.0	8.4	3.3
3	23	3.4	0.0	8.9	3.4
3	24	3.5	0.5	9.2	3.4
3	25	3.7	0.5	9.3	3.5
3	26	3.8	0.5	9.6	3.6
3	27	4.1	0.5	9.6	3.6
3	28	4.3	1.0	9.7	3.6
3	29	4.6	1.1	10.0	3.7
3	30	4.8	1.1	10.1	3.9
3	31	5.1	1.1	10.1	4.0
4	1	5.3	1.7	10.1	4.1
4	2	5.4	2.0	10.2	4.2
4	3	5.7	2.5	10.2	4.4
4	4	5.8	2.5	10.5	4.7
4	5	5.9	2.8	10.4	5.0
4	6	6.1	3.0	10.4	5.2
4	7	6.3	2.8	10.4	5.4
4	8	6.4	2.8	10.6	5.8
4	9	6.5	2.8	10.6	6.3
4	10	6.7	2.8	10.9	6.6
4	11	6.9	2.8	11.5	6.8
4	12	7.1	2.8	11.8	7.1
4	13	7.3	2.8	12.1	7.8
4	14	7.5	2.8	12.3	8.3
4	15	7.7	2.8	12.6	8.4
4	16	7.9	3.3	12.7	8.6
4	17	8.1	3.9	12.7	8.9
4	18	8.3	4.5	12.7	9.1
4	19	8.5	5.0	12.7	9.5
4	20	8.8	5.0	13.5	9.5
4	21	9.1	5.5	13.5	8.9
4	22	9.3	6.5	13.5	8.8
4	23	9.5	6.7	13.5	8.8
4	24	9.8	6.7	14.0	9.3
4	25	9.9	6.7	13.5	9.9
4	26	10.2	6.7	13.5	10.2
4	27	10.4	7.2	13.5	10.6
4	28	10.7	7.8	13.5	11.0
4	29	10.9	8.3	13.9	11.1
4	30	11.2	8.9	13.9	11.5
5	1	11.4	8.9	14.4	11.9
5	2	11.6	8.9	14.4	12.2
5	3	11.8	8.9	14.4	12.5
5	4	12.0	8.9	15.0	12.9
5	5	12.2	8.9	15.0	13.2
5	6	12.4	8.9	15.0	13.4
5	7	12.6	8.9	15.0	13.8
5	8	12.7	8.9	15.2	13.9
5	9	12.9	8.9	15.6	14.0
5	10	13.0	8.9	16.1	14.3
5	11	13.2	9.4	16.1	14.6
5	12	13.4	9.4	16.1	14.9
5	13	13.6	10.0	16.2	15.0
5	14	13.8	10.6	16.7	15.2
5	15	14.1	11.1	17.5	15.2
5	16	14.3	11.1	18.0	15.7
5	17	14.5	11.7	18.0	15.9
5	18	14.6	11.5	17.5	16.1
5	19	14.9	12.0	17.5	16.1
5	20	15.2	12.2	18.0	16.5
5	21	15.4	12.5	18.0	17.0
5	22	15.6	12.8	18.5	17.3
5	23	15.8	12.8	19.0	17.5
5	24	15.9	12.8	19.0	17.6
5	25	16.1	12.8	20.0	17.4

Table B-5 (Continued)

MONTH	DAY	LONG-TERM TEMPERATURE (1951-2012) MEAN	MINIMUM	MAXIMUM	2013 ACTUAL TEMPERATURES
5	26	16.3	12.2	20.5	17.8
5	27	16.6	12.2	20.6	18.0
5	28	16.9	12.2	21.0	17.9
5	29	17.1	12.8	20.7	17.9
5	30	17.3	12.8	21.5	18.0
5	31	17.4	13.3	21.3	18.0
6	1	17.7	13.3	22.0	18.3
6	2	18.1	13.3	22.2	18.6
6	3	18.3	14.4	22.1	18.6
6	4	18.4	13.9	22.5	18.5
6	5	18.6	15.0	22.2	18.7
6	6	18.7	15.6	22.4	18.8
6	7	18.9	15.0	22.4	18.6
6	8	19.1	16.1	22.5	19.0
6	9	19.4	16.5	23.0	19.8
6	10	19.6	16.5	23.2	19.9
6	11	19.8	17.0	23.4	20.1
6	12	20.0	17.0	23.3	20.2
6	13	20.1	17.0	23.4	19.3
6	14	20.2	17.0	23.3	18.6
6	15	20.4	17.0	23.5	17.5
6	16	20.5	17.5	23.8	17.0
6	17	20.6	17.8	23.8	17.4
6	18	20.8	17.5	24.2	17.6
6	19	21.0	17.8	24.1	17.7
6	20	21.2	17.8	24.0	18.1
6	21	21.3	17.8	24.3	18.5
6	22	21.5	17.2	24.3	18.8
6	23	21.6	17.2	24.1	19.2
6	24	21.8	17.8	24.1	19.7
6	25	21.9	17.8	24.5	20.0
6	26	22.1	17.8	24.5	20.3
6	27	22.3	17.8	25.0	20.6
6	28	22.4	17.8	25.0	21.2
6	29	22.6	17.8	25.0	22.0
6	30	22.7	17.8	25.5	23.1
7	1	22.9	18.9	25.5	23.6
7	2	23.0	18.9	25.5	24.3
7	3	23.1	19.4	25.5	24.4
7	4	23.3	19.4	26.0	24.1
7	5	23.4	20.0	26.0	24.1
7	6	23.5	20.0	26.0	24.3
7	7	23.6	20.0	26.0	24.5
7	8	23.7	20.0	26.3	24.8
7	9	23.8	20.0	26.4	25.0
7	10	23.9	20.6	26.4	25.3
7	11	24.0	20.6	26.5	25.5
7	12	24.1	21.1	26.6	25.4
7	13	24.3	21.7	26.7	25.4
7	14	24.3	21.7	26.9	25.7
7	15	24.5	21.7	26.8	26.0
7	16	24.6	22.2	27.0	26.3
7	17	24.6	22.2	27.2	26.6
7	18	24.7	22.2	27.3	26.9
7	19	24.9	22.2	27.3	27.2
7	20	25.0	22.2	27.4	27.4
7	21	25.0	22.8	27.5	27.4
7	22	25.1	22.2	27.4	27.4
7	23	25.1	22.2	27.2	27.4
7	24	25.1	22.8	27.5	27.5
7	25	25.2	22.8	27.5	27.1
7	26	25.2	22.8	27.5	26.9
7	27	25.4	22.8	27.5	27.0
7	28	25.4	22.8	27.5	26.9
7	29	25.4	22.8	27.5	27.0
7	30	25.4	23.0	27.5	27.0
7	31	25.5	23.0	28.0	26.9
8	1	25.5	23.0	28.0	26.7
8	2	25.5	22.8	28.0	26.8
8	3	25.6	23.3	28.0	26.5
8	4	25.6	23.3	28.0	26.3
8	5	25.6	23.3	28.0	26.1
8	6	25.6	23.3	28.0	26.0

Table B-5 (Continued)

MONTH	DAY	LONG-TERM TEMPERATURE (1951-2012) MEAN	MINIMUM	MAXIMUM	2013 ACTUAL TEMPERATURES
8	7	25.5	23.3	28.0	25.8
8	8	25.5	23.3	28.0	25.8
8	9	25.6	23.3	28.0	25.6
8	10	25.6	23.3	28.0	25.5
8	11	25.5	22.8	28.0	25.3
8	12	25.5	22.8	28.1	25.4
8	13	25.4	22.2	28.5	25.2
8	14	25.4	22.2	28.5	25.1
8	15	25.3	22.2	28.4	24.9
8	16	25.3	22.2	28.4	24.9
8	17	25.2	22.2	28.1	24.8
8	18	25.2	22.8	28.0	24.7
8	19	25.1	22.2	27.7	24.6
8	20	25.2	22.8	27.6	24.6
8	21	25.1	22.2	27.5	24.8
8	22	25.0	22.2	27.5	24.8
8	23	24.9	22.8	27.0	24.8
8	24	24.8	22.2	27.0	24.7
8	25	24.7	21.7	27.0	24.7
8	26	24.7	21.7	27.0	24.5
8	27	24.7	22.2	26.8	24.6
8	28	24.6	22.2	26.8	24.8
8	29	24.5	22.2	26.7	24.8
8	30	24.5	22.2	26.5	24.9
8	31	24.4	20.5	26.5	24.9
9	1	24.3	20.2	26.5	24.9
9	2	24.2	20.2	26.7	24.9
9	3	24.1	20.3	26.2	24.8
9	4	24.1	20.6	26.2	24.8
9	5	24.0	20.7	26.2	24.6
9	6	24.0	20.8	26.1	24.3
9	7	23.8	20.7	26.2	24.2
9	8	23.7	19.8	26.1	24.2
9	9	23.6	19.0	26.0	23.9
9	10	23.5	18.8	25.8	23.9
9	11	23.3	18.7	25.6	24.1
9	12	23.3	19.1	25.6	24.2
9	13	23.1	19.4	25.6	24.2
9	14	23.0	18.9	25.5	23.8
9	15	22.8	17.8	25.5	23.5
9	16	22.6	17.2	25.5	23.3
9	17	22.4	17.2	25.5	22.8
9	18	22.2	16.7	25.5	22.7
9	19	22.1	16.7	25.5	22.5
9	20	22.0	17.2	25.5	22.5
9	21	21.7	16.7	25.0	22.3
9	22	21.6	16.1	25.0	22.2
9	23	21.3	16.1	25.0	21.8
9	24	21.1	15.6	24.5	21.7
9	25	20.9	15.6	24.5	21.6
9	26	20.8	15.6	24.0	21.4
9	27	20.7	16.1	24.0	21.2
9	28	20.4	15.6	23.5	21.1
9	29	20.2	15.6	23.5	21.1
9	30	20.0	15.6	23.0	21.1
10	1	19.8	16.1	22.7	21.1
10	2	19.6	15.6	22.5	21.0
10	3	19.5	15.6	22.6	20.9
10	4	19.2	15.6	22.7	20.9
10	5	19.0	15.0	22.7	20.8
10	6	18.8	15.0	22.7	20.6
10	7	18.6	15.0	22.6	20.6
10	8	18.3	14.4	22.6	20.2
10	9	18.1	14.4	22.4	19.8
10	10	18.0	14.4	22.2	19.5
10	11	17.8	13.9	22.0	19.2
10	12	17.5	13.3	21.5	19.0
10	13	17.3	13.3	21.1	19.0
10	14	17.1	12.8	21.1	18.9
10	15	16.9	12.2	20.5	18.9
10	16	16.6	12.2	20.3	18.7
10	17	16.5	12.8	20.2	18.8
10	18	16.3	12.2	20.2	18.6

Table B-5 (Continued)

MONTH	DAY	LONG-TERM TEMPERATURE (1951-2012) MEAN	MINIMUM	MAXIMUM	2013 ACTUAL TEMPERATURES
10	19	16.0	11.7	20.2	18.3
10	20	15.7	10.6	20.0	18.1
10	21	15.4	10.6	19.7	17.9
10	22	15.1	10.0	19.6	17.7
10	23	14.9	10.0	19.6	17.4
10	24	14.7	10.0	19.3	17.0
10	25	14.6	10.0	19.0	16.6
10	26	14.3	10.0	18.6	16.3
10	27	13.9	9.4	18.2	16.0
10	28	13.8	8.9	17.8	15.8
10	29	13.4	8.3	17.8	15.5
10	30	13.2	7.8	16.7	15.3
10	31	13.1	7.2	16.7	15.2
11	1	12.8	7.2	16.7	15.2
11	2	12.5	7.2	16.1	15.0
11	3	12.4	7.2	16.1	14.4
11	4	12.2	7.2	15.6	13.7
11	5	11.9	7.2	15.6	13.4
11	6	11.6	6.7	15.6	13.2
11	7	11.5	6.1	15.0	13.0
11	8	11.2	6.1	15.0	12.4
11	9	11.0	5.6	15.0	12.0
11	10	10.7	5.0	14.4	11.8
11	11	10.4	5.0	13.9	11.4
11	12	10.2	5.0	13.3	10.9
11	13	10.0	5.0	13.3	10.4
11	14	9.8	5.0	13.3	10.0
11	15	9.7	5.0	12.8	9.7
11	16	9.4	5.0	12.8	9.7
11	17	9.2	5.0	12.8	9.6
11	18	9.0	5.0	12.8	9.8
11	19	8.8	5.0	12.2	9.0
11	20	8.6	5.0	11.1	8.5
11	21	8.4	3.9	11.1	8.2
11	22	8.1	3.9	11.1	8.2
11	23	7.9	3.9	11.1	7.9
11	24	7.7	3.9	10.6	6.9
11	25	7.4	3.9	10.6	6.6
11	26	7.2	3.3	10.5	6.5
11	27	7.0	3.3	10.5	6.6
11	28	6.9	3.3	10.5	5.8
11	29	6.7	3.3	10.5	5.4
11	30	6.5	2.8	10.5	5.1
12	1	6.2	2.2	10.5	5.0
12	2	6.0	3.0	10.0	4.8
12	3	5.8	2.2	9.5	4.6
12	4	5.6	1.3	9.5	4.4
12	5	5.4	2.8	9.5	4.4
12	6	5.2	2.6	9.5	4.4
12	7	5.1	2.0	9.5	3.9
12	8	4.8	2.0	9.0	3.5
12	9	4.6	1.7	9.0	3.3
12	10	4.3	1.1	9.0	3.1
12	11	4.1	1.1	8.5	2.7
12	12	3.9	0.6	8.5	2.3
12	13	3.7	0.6	8.5	2.1
12	14	3.6	0.5	8.5	1.8
12	15	3.4	0.5	8.5	1.4
12	16	3.2	0.5	8.0	1.2
12	17	3.0	0.0	8.0	1.0
12	18	2.8	0.0	7.5	0.9
12	19	2.6	0.0	7.5	0.8
12	20	2.6	0.0	7.5	0.8
12	21	2.4	0.0	7.0	0.8
12	22	2.2	0.0	6.5	0.9
12	23	2.1	0.0	6.5	0.8
12	24	2.0	0.0	6.5	0.5
12	25	1.9	0.0	6.0	0.3
12	26	1.8	0.0	6.1	0.3
12	27	1.7	0.0	6.1	0.2
12	28	1.7	0.0	6.1	0.3
12	29	1.7	0.0	6.1	0.5
12	30	1.6	0.0	6.1	0.5
12	31	1.5	0.0	5.0	0.3

Table B-6 Average Annual Water Temperature (°C), Hudson River near Poughkeepsie, 1951 to 2013[1]

YEAR	TEMPERATURE	YEAR	TEMPERATURE
1951	11.66	1983	13.01
1952	12.25	1984	13.04
1953	12.87	1985	13.05
1954	11.92	1986	12.69
1955	12.40	1987	12.66
1956	11.92	1988	12.57
1957	13.03	1989	12.09
1958	12.18	1990	12.77
1959	12.90	1991	13.67
1960	11.29	1992	12.10
1961	12.17	1993	12.09
1962	11.63	1994	12.24
1963	11.82	1995	12.47
1964	12.99	1996	11.83
1965	12.51	1997	12.07
1966	12.75	1998	13.66
1967	12.05	1999	13.08
1968	13.10	2000	12.00
1969	12.59	2001	13.24
1970	12.79	2002	12.85
1971	12.31	2003	11.80
1972	11.35	2004	12.37
1973	12.73	2005	12.68
1974	11.61	2006	12.77
1975	12.37	2007	12.97
1976	11.43	2008	12.54
1977	11.97	2009	12.30
1978	12.27	2010	13.11
1979	12.49	2011	12.41
1980	12.72	2012	14.05
1981	12.63	2013	12.70
1982	12.48		

[1] Data from 1951 through 1992 from Poughkeepsie's Water Treatment Facility. Data from 1993 through 2013 from USGS gaging site 01372058 Hudson River below Poughkeepsie, NY.

Table B-7 Weighted Mean Temperature (°C) by Region and Week from 2013 Long River/Fall Juvenile Survey

WEEK BEGINNING MONDAY	REGIONS												
	BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
11MAR13	4.4	4.4	4.4	2.7	2.9	2.7	2.8	.	.	.	.	.	.
18MAR13	3.7	3.6	3.7	3.7	3.4	3.1	3.2	.	.	.	.	.	.
25MAR13	5.0	4.7	4.5	4.4	4.3	3.9	3.6	.	.	.	.	.	.
01APR13	5.8	6.0	5.9	5.5	5.0	4.5	4.3	4.5	4.8	5.3	5.4	5.7	5.1
08APR13	8.4	8.6	9.4	8.8	7.3	7.0	6.6	6.7	7.6	8.0	8.0	7.4	7.2
15APR13	10.3	9.2	8.9	8.8	8.2	8.8	9.1	8.9	8.7	7.8	7.1	7.2	8.3
22APR13	9.8	10.6	11.1	11.2	10.2	9.8	9.5	9.2	9.8	10.0	9.9	9.0	8.5
29APR13	11.3	12.2	12.6	12.6	11.7	11.2	11.5	12.1	12.5	12.8	13.2	13.5	14.0
06MAY13	13.6	14.5	15.3	15.4	14.1	13.8	14.1	14.0	15.0	15.6	16.2	16.3	16.6
13MAY13	14.6	15.4	15.7	16.2	16.0	14.8	14.7	15.7	16.7	16.9	17.0	17.1	16.5
20MAY13	15.3	16.8	17.8	18.2	17.7	16.7	16.8	17.2	18.1	18.4	18.5	18.7	17.9
27MAY13	16.0	16.5	16.6	18.5	19.1	18.6	18.6	17.9	17.5	16.6	15.2	14.9	15.0
03JUN13	16.5	17.8	19.5	20.5	21.0	19.7	19.8	18.9	19.7	19.7	19.9	20.5	20.3
10JUN13	19.3	20.1	19.8	20.0	19.6	19.8	20.2	19.8	19.4	19.5	18.4	18.1	17.5
17JUN13	19.1	19.8	20.4	20.5	19.4	18.5	18.1	17.9	18.1	17.7	17.7	17.7	18.0
24JUN13	22.0	23.4	23.5	22.9	22.5	20.9	20.6	20.5	21.0	21.6	22.3	22.7	23.3
01JUL13	22.0	23.7	23.5	22.7	23.6	23.5	23.7	24.2	24.1	23.6	23.0	22.4	21.9
08JUL13	22.3	24.2	25.4	26.7	26.5	25.5	25.3	25.1	.	.	.	.	.
15JUL13	23.7	25.1	25.6	26.6	26.8	26.4	26.9	27.3	27.2	27.6	27.7	27.7	27.6
22JUL13	25.9	26.6	26.5	27.2	27.4	27.0	26.6	27.1	.	.	.	.	.
29JUL13	23.1	24.2	25.4	26.6	26.7	26.2	26.3	26.9	26.3	25.7	25.6	25.6	24.8
05AUG13	22.9	23.7	24.7	25.1	25.9	25.6	25.6	25.8	.	.	.	.	.
12AUG13	22.5	23.8	24.6	25.8	25.6	24.8	25.0	25.1	24.6	24.4	24.5	24.5	24.2
19AUG13	22.6	23.7	25.1	25.9	26.1	25.2	25.0	24.8	.	.	.	.	.
26AUG13	23.1	24.0	24.9	25.8	26.1	25.0	24.6	24.8	24.6	24.6	24.5	24.4	24.5
02SEP13	22.8	23.3	24.7	25.2	25.3	24.8	24.4	24.4	.	.	.	.	.
09SEP13	21.9	23.4	24.3	25.5	25.5	24.1	23.9	24.2	24.2	23.0	22.5	22.7	22.2
16SEP13	20.4	21.0	21.9	22.4	23.6	23.0	22.5	22.6	.	.	.	.	.
23SEP13	18.9	19.8	20.5	21.7	22.2	21.3	21.2	21.6	20.9	19.6	19.0	18.6	18.6
30SEP13	19.5	19.9	20.5	20.9	21.1	21.2	21.2	20.9	.	.	.	.	.
07OCT13	19.4	19.8	20.1	21.1	21.5	20.6	20.5	20.2	19.5	19.3	18.9	18.4	18.2
21OCT13	17.8	18.1	18.3	19.3	19.5	18.4	17.9	17.1	16.5	15.9	15.5	14.9	14.5
04NOV13	13.9	13.9	13.9	14.6	15.2	14.1	13.7	13.5	11.7	10.8	10.0	9.6	8.9
18NOV13	11.0	10.8	10.6	12.3	11.7	10.7	9.7	8.6	7.7	7.2	6.2	6.2	6.2

Note: Dots (.) indicate no sampling.

Table B-8 Average Annual Temperature (°C) from Long River/Fall Juvenile Surveys, 1974 to 2013

YEAR	TEMPERATURE
1974	21.54
1975	22.10
1976	20.04
1977	20.79
1978	20.16
1979	21.53
1980	21.23
1981	20.96
1982	19.16
1983	19.14
1984	19.22
1985	21.69
1986	21.28
1987	21.41
1988	21.80
1989	20.65
1990	20.97
1991	23.59
1992	21.06
1993	21.01
1994	21.93
1995	21.78
1996	20.18
1997	20.96
1998	22.26
1999	23.17
2000	20.43
2001	21.43
2002	22.07
2003	21.09
2004	21.94
2005	22.14
2006	21.08
2007	21.69
2008	22.22
2009	21.01
2010	22.93
2011	22.17
2012	22.61
2013	21.92

Table B-9 Mean Temperature (°C) by Region and Week from 2013 Beach Seine Survey

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
10JUN13	20.6	21.1	21.7	20.0	19.7	19.6	19.9	20.5	19.9	19.4	19.2	18.2
24JUN13	22.5	23.6	23.6	23.0	21.0	22.1	21.2	22.0	22.3	22.5	24.4	23.4
08JUL13	27.3	26.9	27.3	27.1	26.1	26.9	26.4	26.2	26.0	25.8	26.7	26.0
22JUL13	27.3	26.9	27.3	27.0	26.4	24.9	26.4	26.4	27.1	27.4	27.3	26.2
05AUG13	24.7	24.9	26.2	26.7	26.1	25.9	25.5	24.8	24.6	24.5	24.4	24.2
19AUG13	24.6	24.8	26.6	25.9	25.0	24.6	24.6	24.0	25.5	25.1	24.8	23.3
02SEP13	25.7	24.4	24.6	25.7	25.2	24.3	23.1	24.2	24.4	25.7	26.2	24.7
16SEP13	21.5	21.4	22.9	24.6	23.1	22.2	21.8	20.9	20.4	20.9	20.4	18.6
30SEP13	20.8	21.5	22.7	23.6	21.7	21.1	20.1	19.7	20.1	19.8	19.2	18.0
14OCT13	19.5	19.5	19.5	21.5	19.5	18.6	18.5	17.4	17.9	18.2	17.6	16.3

Table B-10 Average Annual Temperature (°C) from Beach Seine Surveys, 1974 to 2013

YEAR	TEMPERATURE
1974	21.34
1975	21.59
1976	22.21
1977	22.85
1978	23.71
1979	23.05
1980	24.29
1981	21.91
1982	22.73
1983	24.53
1984	23.17
1985	23.38
1986	22.02
1987	23.03
1988	23.16
1989	24.15
1990	24.34
1991	23.63
1992	22.07
1993	23.48
1994	22.39
1995	23.85
1996	24.42
1997	22.41
1998	24.20
1999	23.42
2000	22.32
2001	24.89
2002	24.52
2003	23.69
2004	22.60
2005	25.69
2006	23.27
2007	23.74
2008	23.85
2009	23.88
2010	23.06
2011	22.01
2012	25.33
2013	23.04

Table B-11 Weighted Mean Salinity (ppt) by Region and Week from 2013 Long River/Fall Juvenile Survey

WEEK BEGINNING MONDAY	REGIONS												
	BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
11MAR13	15.4	8.5	4.5	0.4	0.2	0.1	0.1	.	.	.	.	.	.
18MAR13	12.9	8.1	8.3	5.0	3.2	0.4	0.2	.	.	.	.	.	.
25MAR13	18.7	10.6	7.5	6.3	5.9	3.3	0.8	.	.	.	.	.	.
01APR13	12.4	5.8	3.7	2.9	1.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
08APR13	15.6	11.5	2.9	0.9	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
15APR13	10.5	6.1	2.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
22APR13	15.9	7.6	3.3	1.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
29APR13	12.3	5.5	2.3	0.9	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
06MAY13	18.7	10.7	3.9	1.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
13MAY13	14.4	7.7	3.7	1.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
20MAY13	18.6	12.2	7.7	5.3	3.0	1.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1
27MAY13	9.7	5.1	2.7	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
03JUN13	17.4	12.9	6.6	2.3	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10JUN13	9.7	3.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
17JUN13	16.3	10.5	4.2	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
24JUN13	11.5	3.6	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
01JUL13	12.4	3.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
08JUL13	13.4	7.8	3.9	0.7	0.1	0.1	0.1	0.1	.	.	.	.	.
15JUL13	16.2	9.1	8.5	5.4	3.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1
22JUL13	14.0	8.7	4.2	2.0	1.4	0.3	0.1	0.1	.	.	.	.	.
29JUL13	19.8	13.5	7.6	3.2	2.7	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
05AUG13	18.4	13.5	8.0	6.4	4.6	2.3	0.6	0.1	.	.	.	.	.
12AUG13	17.4	10.7	5.5	2.3	1.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
19AUG13	20.5	14.4	5.9	3.9	2.5	0.6	0.1	0.1	.	.	.	.	.
26AUG13	18.8	12.0	6.8	5.0	3.3	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1
02SEP13	17.7	12.9	8.2	7.0	5.3	2.6	0.5	0.1	.	.	.	.	.
09SEP13	22.7	13.0	7.4	4.9	3.6	1.0	0.4	0.1	0.1	0.1	0.1	0.1	0.1
16SEP13	17.7	13.2	7.2	5.0	3.1	1.1	0.3	0.1	.	.	.	.	.
23SEP13	19.2	11.6	8.0	4.4	2.8	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
30SEP13	19.1	14.6	10.4	8.5	7.2	5.1	3.1	0.5	.	.	.	.	.
07OCT13	15.8	9.9	7.0	5.6	5.8	2.8	1.4	0.4	0.1	0.1	0.1	0.2	0.1
21OCT13	18.0	13.2	8.0	5.1	3.2	1.5	0.9	0.2	0.2	0.2	0.2	0.1	0.1
04NOV13	21.3	13.7	7.5	5.7	4.6	1.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1
18NOV13	21.1	14.3	6.2	1.5	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Note: Dots (.) indicate no sampling.

Table B-12 Mean Salinity (ppt) by Region and Week from 2013 Beach Seine Survey

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
10JUN13	3.0	1.9	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
24JUN13	3.1	0.8	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
08JUL13	1.3	0.7	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
22JUL13	8.1	4.6	3.4	1.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
05AUG13	7.3	5.8	4.2	3.4	0.8	0.2	0.1	0.1	0.1	0.1	0.1	0.1
19AUG13	9.0	5.2	3.1	1.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2
02SEP13	6.6	6.3	4.8	3.9	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1
16SEP13	10.1	6.0	3.7	2.9	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.1
30SEP13	8.4	6.9	6.0	6.3	3.8	1.6	0.2	0.1	0.1	0.1	0.2	0.2
14OCT13	10.3	7.8	6.1	4.8	2.1	1.1	0.2	0.1	0.2	0.2	0.2	0.1

Table B-13 Weighted Mean Dissolved Oxygen (mg/L) by Region and Week from 2013 Long River/Fall Juvenile Survey

WEEK BEGINNING	REGIONS												
MONDAY	BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
11MAR13	10.5	11.5	12.2	11.7	11.6	11.6	11.9	.	.	.	.	.	.
18MAR13	10.3	11.0	11.1	11.9	12.2	12.8	12.7	.	.	.	.	.	.
25MAR13	9.6	10.5	11.1	11.3	11.3	11.9	12.5	.	.	.	.	.	.
01APR13	9.6	10.6	11.2	10.6	10.8	11.3	11.5	11.7	11.9	11.6	11.4	11.5	11.9
08APR13	8.7	8.7	9.3	9.7	10.2	10.2	10.2	10.6	11.0	10.8	10.9	11.3	11.5
15APR13	9.6	9.6	9.3	10.7	10.0	10.2	9.4	9.9	10.8	11.2	11.4	11.6	11.4
22APR13	8.1	9.3	10.1	10.5	10.5	10.6	9.8	10.1	10.4	10.3	10.0	10.7	10.9
29APR13	7.8	8.9	9.9	9.6	10.0	10.2	10.3	10.3	10.2	10.6	10.3	10.1	10.0
06MAY13	7.0	7.3	8.5	8.8	9.6	9.8	9.6	9.7	9.6	9.8	9.8	9.8	9.7
13MAY13	6.8	7.4	8.2	8.7	8.8	8.9	9.1	9.1	9.2	9.0	9.2	8.7	8.3
20MAY13	6.5	6.7	7.3	7.7	8.1	8.3	8.7	8.6	9.2	8.8	8.9	8.8	8.3
27MAY13	7.1	7.9	8.5	9.0	8.5	8.8	8.8	8.9	8.8	9.1	9.6	9.2	9.4
03JUN13	6.6	6.6	7.0	7.6	8.2	8.8	8.9	9.0	8.9	8.4	7.9	7.7	8.1
10JUN13	6.6	7.4	8.0	7.8	7.4	7.0	6.6	6.5	7.0	7.5	8.0	8.3	8.9
17JUN13	6.8	6.8	6.8	7.6	8.2	8.6	8.5	8.6	8.6	8.6	8.7	8.8	9.1
24JUN13	5.2	6.2	7.1	7.1	7.1	7.4	7.4	6.8	7.5	7.6	7.7	7.9	8.0
01JUL13	5.8	6.5	7.3	7.2	7.0	7.1	7.0	6.8	6.9	7.0	7.2	7.7	8.4
08JUL13	5.8	5.9	6.1	6.0	5.9	6.0	6.2	6.4	.	.	.	.	.
15JUL13	5.5	5.4	5.4	5.1	5.1	5.4	5.4	5.5	5.5	5.7	5.7	6.3	7.2
22JUL13	4.1	4.7	6.1	5.6	5.5	5.4	5.6	5.4	.	.	.	.	.
29JUL13	5.4	5.4	5.5	5.6	5.4	5.8	5.7	5.6	5.7	6.2	6.3	6.8	7.5
05AUG13	5.1	5.5	6.1	5.6	5.2	5.2	5.8	5.7	.	.	.	.	.
12AUG13	5.2	5.5	6.3	6.0	6.4	8.3	8.3	8.2	8.4	8.3	8.2	8.2	8.2
19AUG13	5.3	5.2	6.6	6.9	6.5	7.3	7.5	7.5	.	.	.	.	.
26AUG13	6.7	6.6	7.1	6.9	7.3	6.6	6.4	6.1	6.1	7.0	7.3	7.0	7.1
02SEP13	4.4	5.0	6.3	6.5	5.6	5.8	6.1	6.1	.	.	.	.	.
09SEP13	5.0	5.7	6.6	6.4	6.3	6.8	7.2	6.9	7.0	7.1	7.3	7.3	7.4
16SEP13	5.2	5.4	6.4	6.8	6.7	6.8	7.2	7.1	.	.	.	.	.
23SEP13	6.0	6.6	6.6	6.8	7.2	7.8	7.7	7.1	7.5	7.8	7.9	8.4	8.4
30SEP13	6.7	6.4	6.5	6.5	6.4	6.7	7.1	7.6	.	.	.	.	.
07OCT13	5.7	6.2	6.7	6.5	6.2	6.8	6.9	7.1	7.6	8.0	9.1	8.9	8.6
21OCT13	5.7	6.0	7.2	7.2	7.3	7.7	7.9	8.1	8.3	8.7	9.3	9.2	9.1
04NOV13	6.1	6.8	8.2	8.3	8.4	9.1	9.5	9.5	10.1	10.6	11.1	11.5	12.0
18NOV13	7.6	8.3	9.7	10.3	10.5	10.9	10.9	11.2	11.7	11.9	12.5	12.6	12.6

Note: Dots (.) indicate no sampling.

Table B-14 Average Annual Dissolved Oxygen (mg/l) from Long River/Fall Juvenile Surveys, 1974 to 2013

YEAR	DISSOLVED OXYGEN
1974	7.26
1975	7.69
1976	8.37
1977	7.66
1978	7.86
1979	8.02
1980	7.77
1981	7.82
1982	7.99
1983	8.29
1984	8.64
1985	8.14
1986	8.19
1987	7.79
1988	7.58
1989	7.58
1990	7.77
1991	7.10
1992	7.67
1993	7.59
1994	7.95
1995	7.90
1996	7.95
1997	7.91
1998	7.61
1999	7.56
2000	7.97
2001	7.54
2002	7.51
2003	7.51
2004	7.12
2005	7.04
2006	7.13
2007	7.21
2008	6.81
2009	7.29
2010	6.99
2011	7.36
2012	6.86
2013	7.00

Table B-15 Mean Dissolved Oxygen (mg/L) by Region and Week from 2013 Beach Seine Survey

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
10JUN13	8.0	7.9	7.4	8.8	8.0	8.0	7.9	7.3	7.1	7.1	7.6	8.0
24JUN13	5.4	6.6	6.1	6.6	6.7	6.2	6.8	6.5	6.4	6.7	6.7	6.8
08JUL13	6.5	6.4	6.1	5.5	5.2	5.1	5.7	5.8	5.8	5.8	6.1	6.2
22JUL13	4.8	5.9	5.5	5.8	5.7	6.1	5.7	5.6	6.1	6.4	6.1	6.8
05AUG13	6.5	6.3	6.8	5.7	6.2	6.2	6.2	6.0	6.4	7.1	7.7	7.7
19AUG13	5.4	6.1	6.3	5.5	5.8	5.9	5.4	5.2	6.6	6.0	6.1	5.9
02SEP13	6.7	6.7	6.5	6.5	7.2	7.1	7.1	5.7	5.8	6.2	6.5	5.9
16SEP13	6.6	6.3	7.0	7.0	6.8	6.8	7.3	6.5	7.5	7.9	8.0	8.2
30SEP13	6.9	6.7	7.0	7.1	6.1	6.6	6.7	6.7	8.0	8.2	8.0	7.8
14OCT13	6.5	6.7	7.1	6.1	6.6	6.6	6.8	7.2	7.8	8.1	8.2	8.2

Table B-16 Average Annual Dissolved Oxygen (mg/l) from Beach Seine Surveys, 1974 to 2013

YEAR	DISSOLVED OXYGEN
1974	8.71
1975	7.82
1976	7.89
1977	7.35
1978	7.29
1979	8.61
1980	8.08
1981	8.34
1982	7.85
1983	7.14
1984	8.42
1985	7.98
1986	8.28
1987	8.63
1988	7.95
1989	7.60
1990	7.90
1991	8.82
1992	8.56
1993	7.39
1994	8.33
1995	7.67
1996	6.93
1997	8.44
1998	7.42
1999	7.62
2000	7.38
2001	7.37
2002	6.76
2003	7.09
2004	7.20
2005	6.44
2006	7.26
2007	6.46
2008	6.86
2009	6.34
2010	6.29
2011	6.84
2012	5.92
2013	6.65

Table B-17 Weighted Mean Percent Oxygen Saturation by Region and Week from 2013 Long River/Fall Juvenile Survey

WEEK BEGINNING MONDAY	REGIONS												
	BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
11MAR13	90.9	94.5	97.3	86.6	85.8	85.7	87.8	.	.	.	.	.	.
18MAR13	85.1	87.6	88.6	93.0	93.6	95.4	95.4	.	.	.	.	.	.
25MAR13	86.0	88.4	91.0	90.9	91.3	92.5	94.7	.	.	.	.	.	.
01APR13	84.3	88.6	92.4	86.2	85.2	87.4	88.2	90.4	92.7	91.3	90.2	91.9	93.8
08APR13	82.7	80.6	83.0	84.4	84.8	84.4	83.5	87.1	91.7	91.3	92.0	93.8	95.5
15APR13	91.9	87.4	81.6	92.2	84.6	87.9	81.9	85.7	92.4	94.4	94.0	96.5	96.7
22APR13	80.3	88.4	94.2	96.6	93.7	93.9	85.7	88.2	91.7	90.9	88.7	92.4	93.4
29APR13	77.5	86.6	94.2	90.9	92.3	92.7	94.2	96.0	95.7	100.0	97.8	96.7	97.2
06MAY13	76.9	77.3	87.5	89.1	93.1	94.7	93.7	93.8	95.1	98.8	99.3	99.8	99.6
13MAY13	73.7	78.0	84.2	89.3	89.8	87.6	90.1	91.7	94.3	92.6	95.1	89.9	85.1
20MAY13	74.0	75.5	80.4	84.4	86.2	86.1	90.1	89.5	97.7	93.9	95.0	94.8	87.4
27MAY13	76.8	84.0	88.7	96.4	91.5	94.3	93.9	93.6	92.2	93.3	95.6	91.1	93.2
03JUN13	76.5	75.8	80.0	85.4	91.7	96.8	97.3	97.4	97.1	91.4	87.0	85.1	90.2
10JUN13	75.6	82.9	87.2	85.8	81.0	77.1	72.5	71.5	76.1	82.1	85.0	88.1	93.2
17JUN13	81.7	80.4	78.0	84.6	88.7	92.2	89.9	91.1	90.9	90.5	90.9	92.9	96.5
24JUN13	64.6	74.5	84.4	83.0	81.8	82.9	82.6	75.7	84.0	86.2	88.4	91.2	93.8
01JUL13	71.6	78.2	85.4	83.5	82.8	83.3	83.1	81.4	82.1	82.7	83.9	89.1	95.5
08JUL13	72.8	74.3	75.8	74.8	73.6	72.7	74.9	77.1	.	.	.	.	.
15JUL13	72.2	69.8	69.3	66.1	64.9	66.8	68.2	69.2	68.7	71.8	72.6	80.3	91.3
22JUL13	55.7	61.4	77.5	71.9	69.5	67.4	70.2	68.4	.	.	.	.	.
29JUL13	72.2	69.4	70.4	70.8	68.1	71.5	71.2	69.5	70.4	76.5	77.3	82.6	91.0
05AUG13	66.8	70.9	77.2	71.2	66.3	64.4	71.4	70.4	.	.	.	.	.
12AUG13	67.3	69.7	78.0	74.9	79.5	99.7	100.5	99.1	101.2	98.7	98.3	98.6	98.3
19AUG13	69.8	66.8	82.9	86.4	81.4	88.9	90.3	90.9	.	.	.	.	.
26AUG13	87.7	83.9	89.3	87.0	92.3	80.5	77.5	73.4	73.6	83.6	87.2	83.6	84.8
02SEP13	57.1	63.5	79.8	82.7	70.9	70.3	73.5	72.6	.	.	.	.	.
09SEP13	65.8	73.2	83.0	80.3	78.1	81.0	85.4	82.8	83.8	82.8	84.0	84.8	84.9
16SEP13	64.2	65.6	76.8	81.3	80.2	80.1	83.4	82.3	.	.	.	.	.
23SEP13	72.9	77.2	77.1	79.0	83.7	88.0	86.1	81.1	83.9	84.8	85.2	90.4	89.6
30SEP13	83.0	77.9	76.9	76.7	75.2	77.9	81.0	85.2	.	.	.	.	.
07OCT13	68.9	72.3	77.6	76.1	73.0	76.7	77.1	78.0	82.3	87.0	98.3	94.5	91.3
21OCT13	67.5	69.6	81.1	81.1	81.1	82.5	83.5	83.9	85.3	87.9	93.4	91.5	89.8
04NOV13	68.7	71.8	83.4	85.2	86.6	89.6	91.8	91.5	93.0	95.7	98.6	100.8	103.8
18NOV13	79.8	82.7	91.1	97.2	96.8	98.2	96.0	95.7	98.0	98.7	101.1	101.6	101.9

Note: Dots (.) indicate no sampling.

Table B-18 Mean Percent Oxygen Saturation by Region and Week from 2013 Beach Seine Survey

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
10JUN13	90.5	90.3	84.0	97.3	87.4	87.6	86.7	81.3	77.6	77.3	82.7	84.7
24JUN13	63.8	78.2	71.6	76.8	75.3	70.5	77.0	74.5	74.0	76.8	79.5	80.2
08JUL13	82.3	80.4	77.3	69.0	64.5	63.8	70.8	72.3	71.7	71.6	76.5	76.8
22JUL13	63.3	76.3	71.1	72.8	71.0	74.3	70.5	69.0	76.2	81.0	76.7	84.2
05AUG13	82.4	78.9	85.7	72.8	77.1	76.7	75.5	72.4	76.5	85.2	92.4	91.8
19AUG13	69.0	75.6	79.6	68.3	70.8	71.0	65.3	62.1	80.4	72.5	73.1	69.1
02SEP13	84.9	84.0	80.5	81.9	87.5	85.0	82.6	67.5	69.0	76.5	80.2	71.5
16SEP13	79.7	74.4	83.3	85.0	79.1	77.7	82.8	73.3	83.4	88.1	89.3	87.2
30SEP13	81.2	79.8	84.1	87.2	71.0	75.4	73.6	72.7	87.9	90.1	87.0	82.3
14OCT13	75.1	76.7	80.1	71.1	72.4	70.8	72.9	74.6	82.2	85.5	86.4	83.8

Table B-19 Weighted Mean Conductivity (mS/cm @ 25°C) by Region and Week from 2013 Long River/Fall Juvenile Survey

WEEK BEGINNING MONDAY	REGIONS												
	BT	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
11MAR13	25.3	14.5	7.8	0.7	0.3	0.3	0.3	.	.	.	.	.	.
18MAR13	20.9	13.5	13.8	8.6	5.5	0.6	0.3	.	.	.	.	.	.
25MAR13	30.4	18.0	12.8	10.8	10.3	5.7	1.4	.	.	.	.	.	.
01APR13	20.7	10.1	6.6	5.2	2.2	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.3
08APR13	25.6	19.3	5.1	1.5	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2
15APR13	17.5	10.3	4.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
22APR13	26.1	13.0	5.8	2.2	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
29APR13	20.5	9.5	4.0	1.7	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
06MAY13	30.3	18.0	6.8	2.3	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
13MAY13	23.7	13.2	6.5	1.9	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
20MAY13	30.2	20.4	13.3	9.2	5.3	2.0	0.8	0.2	0.2	0.2	0.2	0.2	0.3
27MAY13	16.3	8.9	4.8	0.9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
03JUN13	28.2	21.4	11.3	4.0	0.7	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10JUN13	16.0	5.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
17JUN13	26.6	17.7	7.2	1.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
24JUN13	19.3	6.3	0.9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
01JUL13	20.5	5.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
08JUL13	22.1	13.2	6.8	1.2	0.2	0.2	0.2	0.2	.	.	.	.	.
15JUL13	26.3	15.3	14.4	9.4	6.1	1.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
22JUL13	23.2	14.9	7.3	3.6	2.5	0.6	0.2	0.2	.	.	.	.	.
29JUL13	31.9	22.4	12.9	5.6	4.7	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
05AUG13	29.9	22.5	13.7	11.1	7.9	4.0	1.0	0.2	.	.	.	.	.
12AUG13	28.4	18.0	9.5	4.1	2.7	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
19AUG13	33.1	23.9	10.1	6.8	4.5	1.0	0.2	0.2	.	.	.	.	.
26AUG13	30.4	20.0	11.7	8.7	5.8	1.0	0.3	0.2	0.2	0.2	0.2	0.3	0.3
02SEP13	28.9	21.6	14.1	12.1	9.1	4.5	0.8	0.2	.	.	.	.	.
09SEP13	36.1	21.6	12.8	8.5	6.2	1.8	0.6	0.3	0.2	0.2	0.2	0.2	0.3
16SEP13	28.8	22.0	12.5	8.6	5.5	1.9	0.5	0.3	.	.	.	.	.
23SEP13	31.0	19.5	13.6	7.7	4.9	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3
30SEP13	31.0	24.2	17.5	14.5	12.4	8.9	5.5	0.8	.	.	.	.	.
07OCT13	26.1	16.8	12.1	9.8	10.0	5.0	2.5	0.7	0.3	0.3	0.3	0.3	0.3
21OCT13	29.4	22.1	13.8	8.8	5.6	2.6	1.7	0.3	0.3	0.3	0.3	0.2	0.3
04NOV13	34.2	22.8	12.9	9.8	8.0	2.2	0.4	0.3	0.3	0.3	0.3	0.3	0.2
18NOV13	33.9	23.6	10.6	2.6	1.0	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2

Note: Dots (.) indicate no sampling.

Table B-20 Mean Conductivity (mS/cm @ 25°C) by Region and Week from 2013 Beach Seine Survey

WEEK BEGINNING MONDAY	REGIONS											
	YK	TZ	CH	IP	WP	CW	PK	HP	KG	SG	CS	AL
10JUN13	5.3	3.4	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
24JUN13	5.3	1.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
08JUL13	2.4	1.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
22JUL13	13.9	8.0	6.0	1.9	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
05AUG13	12.5	10.1	7.3	5.9	1.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
19AUG13	15.4	9.1	5.5	2.4	0.5	0.3	0.2	0.2	0.2	0.2	0.3	0.3
02SEP13	11.3	10.8	8.4	6.9	1.8	0.4	0.3	0.2	0.3	0.3	0.3	0.3
16SEP13	17.1	10.4	6.5	5.1	1.1	0.4	0.3	0.3	0.3	0.3	0.3	0.3
30SEP13	14.3	11.9	10.3	10.9	6.7	2.9	0.3	0.3	0.3	0.3	0.3	0.3
14OCT13	17.4	13.3	10.6	8.3	3.7	1.9	0.4	0.3	0.3	0.3	0.3	0.3

Appendix E

Temporal and Geographical Distribution Indices

APPENDIX E

LIST OF TABLES

APPENDIX E

LIST OF TABLES (CONTINUED)

Table E-1 Striped Bass Temporal Distribution Indices Based on Long River Survey, 1974-2013

Week	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
18	0.01644	0.31883	0.00203	0.00548	0.00022	0.00001	0	0
19	0.08577	0.38492	0.02002	0.40437	0.00118	0.02701	0	0
20	0.34020	0.17643	0.25755	0.14481	0.02018	0.21429	0.06102	0
21	0.36390	0.07960	0.29263	0.13659	0.28373	0.29859	0.00077	0
22	0.14310	0.02781	0.15932	0.23771	0.24637	0.16807	0	0
23	0.04227	0.00438	0.21436	0.05411	0.18555	0.24489	0.00499	0
24	0.00641	0.00677	0.04806	0.00560	0.17341	0.02268	0.11860	0.46356
25	0.00112	0.00125	0.00525	0.01132	0.06237	0.02446	0.23470	0.53644
26	0.00079	NS	0.00077	NS	0.027	NS	0.57992	NS

NS = No sampling in week 26 during 2013 LRS.

Table E-2 Striped Bass Geographical Distribution Indices Based on Long River Survey, 1974-2013

Region	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
Yonkers	0.04745	0.00098	0.00206	0.00051	0.05526	0.03896	0.01033	0
Tappan Zee	0.00156	0.00074	0.02370	0.00312	0.09681	0.12142	0.08353	0.53644
Croton-Haverstraw	0.00411	0.00058	0.02162	0.01208	0.07879	0.10760	0.09439	0.36091
Indian Point	0.01807	0.00473	0.08042	0.10834	0.17464	0.20261	0.09551	0.02927
West Point	0.12124	0.14355	0.18960	0.10175	0.22959	0.12962	0.08199	0.07338
Cornwall	0.19371	0.26961	0.15883	0.06663	0.13481	0.13964	0.15800	0
Poughkeepsie	0.13626	0.26258	0.33599	0.46716	0.16570	0.16897	0.13136	0
Hyde Park	0.13648	0.15800	0.13247	0.10516	0.03400	0.04207	0.01910	0
Kingston	0.23474	0.09775	0.03911	0.05706	0.01630	0.03719	0.07805	0
Saugerties	0.09783	0.03789	0.01415	0.07521	0.00898	0.01078	0.08511	0
Catskill	0.00623	0.02047	0.00191	0.00273	0.00489	0.00110	0.12692	0
Albany	0.00233	0.00312	0.00013	0.00024	0.00021	0.00003	0.03571	0

Table E-3 Striped Bass Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year		Yearling		Older-than-Yearling	
	1974-2012	2013	1974-2012	2013	1974-2012	2013
Yonkers	0.04120	0.03814	0.03246	0	0.04172	0
Tappan Zee	0.38367	0.19432	0.35265	0.39619	0.27903	1
Croton-Haverstraw	0.33869	0.18270	0.26903	0.26798	0.18320	0
Indian Point	0.05651	0.02396	0.03333	0	0.03724	0
West Point	0.01296	0.01587	0.00743	0	0.02871	0
Cornwall	0.04127	0.00607	0.04551	0.06192	0.05244	0
Poughkeepsie	0.01713	0.01942	0.04648	0	0.02588	0
Hyde Park	0.00107	0.00967	0.00378	0	0.00187	0
Kingston	0.01238	0.02239	0.02137	0	0.03123	0
Saugerties	0.03605	0.09744	0.05934	0.06804	0.15039	0
Catskill	0.04063	0.35948	0.06870	0.20588	0.11724	0
Albany	0.01844	0.03055	0.05993	0	0.05106	0

Table E-4 White Perch Temporal Distribution Indices Based on Long River Survey, 1974-2013

Week	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
18	0.10485	0.17023	0.08756	0.12594	0.00229	0	0.00429	--[1]
19	0.15824	0.16057	0.19120	0.10742	0.02988	0.08966	0.01185	--
20	0.17164	0.53336	0.26423	0.05934	0.08640	0.13533	0	--
21	0.18810	0.03828	0.17859	0.05637	0.15870	0.12444	0.00017	--
22	0.14666	0.04731	0.11050	0.41462	0.18057	0.17781	0.00027	--
23	0.12528	0.03739	0.10899	0.13084	0.18594	0.40966	0.00618	--
24	0.09644	0.00916	0.04657	0.01651	0.16612	0.02124	0.18192	--
25	0.00770	0.00370	0.01037	0.08896	0.12289	0.04186	0.31277	--
26	0.00109	NS	0.00198	NS	0.06723	NS	0.48256	--

[1] No young-of-year white perch were collected within the temporal limits of this index in 2013.

NS = No sampling in week 26 during 2013 LRS.

Table E-5 White Perch Geographical Distribution Indices Based on Long River Survey, 1974-2013

Region	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
Yonkers	0.00015	0.00076	0.00121	0	0.00749	0.00078	0.00307	--[1]
Tappan Zee	0.00804	0.00044	0.01432	0.00079	0.02075	0.00942	0.00651	--
Croton-Haverstraw	0.00548	0	0.01187	0.00122	0.02009	0.01655	0.01229	--
Indian Point	0.00229	0.00007	0.01736	0.00445	0.05158	0.04024	0.10830	--
West Point	0.01540	0.00066	0.03306	0.00770	0.07392	0.06853	0.11053	--
Cornwall	0.01779	0.00033	0.04170	0.01108	0.08197	0.07230	0.10037	--
Poughkeepsie	0.07055	0.00769	0.14393	0.07993	0.20245	0.31966	0.23489	--
Hyde Park	0.03969	0.00149	0.13817	0.06527	0.13795	0.14753	0.19601	--
Kingston	0.09026	0.29220	0.15388	0.12041	0.14735	0.14494	0.14629	--
Saugerties	0.23149	0.11920	0.18954	0.22243	0.14025	0.08090	0.02786	--
Catskill	0.38766	0.44259	0.18708	0.37264	0.10760	0.09228	0.04621	--
Albany	0.13122	0.13455	0.06790	0.11407	0.00859	0.00687	0.00766	--

[1] No young-of-year white perch were collected within the temporal limits of this index in 2013.

Table E-6 White Perch Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year		Yearling		Older-than-Yearling	
	1974-2012	2013	1974-2012	2013	1974-2012	2013
Yonkers	0.00289	0	0.00113	0	0.02817	0.31246
Tappan Zee	0.17617	0.06607	0.23988	0.14202	0.32857	0.22582
Croton-Haverstraw	0.27186	0.27873	0.40691	0.10895	0.35220	0.16935
Indian Point	0.07110	0.05417	0.05511	0.04384	0.04941	0.04142
West Point	0.02564	0.00290	0.01031	0.00289	0.00722	0.00456
Cornwall	0.05606	0	0.03273	0.00650	0.04454	0
Poughkeepsie	0.03286	0.00261	0.01368	0.02077	0.01430	0.02208
Hyde Park	0.00816	0.00683	0.00251	0.00771	0.00259	0.00171
Kingston	0.03967	0.01898	0.01955	0.08191	0.01883	0.00595
Saugerties	0.13924	0.03583	0.08797	0.03569	0.06104	0.02360
Catskill	0.14732	0.19517	0.10159	0.47160	0.06684	0.13265
Albany	0.02903	0.33871	0.02863	0.07813	0.02630	0.06040

Table E-7 Atlantic Tomcod Temporal Distribution Indices Based on Long River Survey, 1974-2013

Week	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
18	0	--[1]	0.52375	--[1]	0.77688	0.30577	0.17967	0.23629
19	0	--	0.02082	--	0.17454	0.65321	0.22157	0.28039
20	0	--	0.27516	--	0.02575	0.04102	0.18079	0.18444
21	0	--	0	--	0.01909	0	0.11333	0.06585
22	0	--	0	--	0.00156	0	0.09824	0.07158
23	0	--	0	--	0.00091	0	0.06039	0.05283
24	0	--	0.18026	--	0.00016	0	0.05315	0.07807
25	0	--	0	--	0.00077	0	0.05288	0.03054
26	1	NS	0	NS	0.00034	NS	0.03998	NS

[1] No Atlantic tomcod eggs or yolk-sac larvae were collected within the temporal limits of this index in 2013.

NS = No sampling in week 26 during 2013 LRS.

Table E-8 Atlantic Tomcod Geographical Distribution Indices Based on Long River Survey, 1974-2013

Region	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
Yonkers	1	--[1]	0.34334	--[1]	0.51281	0.03703	0.41211	0.14879
Tappan Zee	0	--	0.18026	--	0.26350	0.17949	0.24100	0.16502
Croton-Haverstraw	0	--	0	--	0.04007	0	0.05246	0.12362
Indian Point	0	--	0	--	0.09419	0.35198	0.12697	0.32298
West Point	0	--	0.47640	--	0.07288	0.43149	0.11573	0.14217
Cornwall	0	--	0	--	0.00919	0	0.02298	0.05651
Poughkeepsie	0	--	0	--	0.00630	0	0.02028	0.02917
Hyde Park	0	--	0	--	0.00044	0	0.00453	0.00445
Kingston	0	--	0	--	0.00015	0	0.00246	0.00730
Saugerties	0	--	0	--	0.00023	0	0.00061	0
Catskill	0	--	0	--	0.00020	0	0.00068	0
Albany	0	--	0	--	0.00002	0	0.00020	0

[1] No Atlantic tomcod eggs or yolk-sac larvae were collected within the temporal limits of this index in 2013.

Table E-9 Atlantic Tomcod Geographical Distribution Indices Based on Fall Juvenile Survey, 1979-2013

Region	Young-of-Year		Yearling and Older	
	1979-2012	2013	1979-2012	2013
Yonkers	0.25494	0.05753	0.44886	--[1]
Tappan Zee	0.14081	0.10828	0.14027	--
Croton-Haverstraw	0.05505	0.02508	0.03293	--
Indian Point	0.10332	0.04541	0.09792	--
West Point	0.22365	0.23992	0.18118	--
Cornwall	0.10871	0.17899	0.06224	--
Poughkeepsie	0.07456	0.19829	0.03177	--
Hyde Park	0.01790	0.02776	0.00110	--
Kingston	0.01263	0.04585	0	--
Saugerties	0.00658	0.03524	0.00300	--
Catskill	0.00165	0.03766	0.00072	--
Albany	0.00020	0	0	--

[1] No Atlantic tomcod yearling and older were collected within the temporal limits of this index in 2013.

Table E-10 Bay Anchovy Temporal Distribution Indices Based on Long River Survey, 1988-2013

Week	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1988-2012	2013	1988-2012	2013	1988-2012	2013	1988-2012	2013
18	0	0	0	0	0	0	0	0
19	0.00014	0.00019	0	0	0	0	0	0.00048
20	0.00138	0.03199	0.00159	0	0.00001	0.00002	0	0.00138
21	0.02264	0.01188	0.01158	0	0.00003	0.00005	0.00001	0
22	0.05945	0.08206	0.12365	0.01485	0.00464	0.00533	0	0
23	0.12519	0.02379	0.11816	0	0.03846	0.00015	0.00002	0
24	0.14559	0.05558	0.30221	0.00754	0.05265	0.00051	0.00001	0
25	0.15070	0.17037	0.14753	0.71532	0.11661	0.01464	0.00004	0
26	0.14012	NS	0.16928	NS	0.14270	NS	0.00293	NS
27	0.09841	0.47427	0.01517	0.00322	0.09563	0.03739	0.00656	0
28	0.15191	NS	0.01760	NS	0.19720	NS	0.01081	NS
29	0.01623	0.07940	0	0.25906	0.03898	0.39762	0.02985	0.00001
30	0.05432	NS	0.03542	NS	0.11866	NS	0.07895	NS
31	0.01067	0.06229	0.00047	0	0.02585	0.15903	0.04937	0.02143
32	0.01738	NS	0.03917	NS	0.06919	NS	0.14832	NS
33	0.00333	0.00191	0.00017	0	0.01437	0.19349	0.08736	0.17139
34	0.00240	NS	0.01741	NS	0.04108	NS	0.16485	NS
35	0.00005	0.00628	0.00060	0	0.00792	0.11871	0.06382	0.25177
36	0.00007	NS	0	NS	0.01784	NS	0.12140	NS
37	0.00001	0	0	0	0.00298	0.05622	0.03132	0.42424
38	0.00001	NS	0	NS	0.00924	NS	0.09334	NS
39	0	0	0	0	0.00187	0.01683	0.03229	0.12931
40	0	NS	0	NS	0.00407	NS	0.07872	NS

NS = No sampling during these weeks in 2013.

Table E-11 Bay Anchovy Geographical Distribution Indices Based on Long River Survey, 1988-2013

Region	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1988-2012	2013	1988-2012	2013	1988-2012	2013	1988-2012	2013
Battery	0.32155	0.58081	0.43157	0.66653	0.16357	0.15691	0.07713	0.04995
Yonkers	0.44179	0.36042	0.22587	0.32396	0.17833	0.21634	0.16019	0.13626
Tappan Zee	0.20215	0.04946	0.19178	0.00951	0.27662	0.33616	0.36915	0.32490
Croton-Haverstraw	0.02041	0.00235	0.10599	0	0.16969	0.12250	0.14448	0.20878
Indian Point	0.01385	0.00689	0.03974	0	0.15333	0.10106	0.05613	0.13832
West Point	0.00018	0	0.00027	0	0.02298	0.01923	0.04346	0.02719
Cornwall	0.00001	0	0.00359	0	0.01726	0.03062	0.07202	0.06449
Poughkeepsie	0.00002	0.00006	0.00016	0	0.01777	0.01719	0.07738	0.05010
Hyde Park	0	0	0.00005	0	0.00015	0	0.00001	0
Kingston	0	0	0.00069	0	0.00012	0	0.00006	0
Saugerties	0.00001	0	0	0	0.00005	0	0	0
Catskill	0.00002	0	0	0	0.00005	0	0	0
Albany	0.00001	0	0.0003	0	0.00007	0	0	0

Table E-12 Bay Anchovy Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year		Yearling and Older	
	1974-2012	2013	1974-2012	2013
Yonkers	0.21214	0.05121	0.79968	0
Tappan Zee	0.53499	0.40075	0.14375	0.74562
Croton-Haverstraw	0.07974	0.23328	0.00348	0.13755
Indian Point	0.06504	0.14528	0.03639	0
West Point	0.02126	0.04930	0.00439	0
Cornwall	0.04583	0.08626	0.00821	0.06356
Poughkeepsie	0.01729	0.00929	0.00180	0
Hyde Park	0.00053	0.00462	0	0.05328
Kingston	0.00507	0.01097	0.00019	0
Saugerties	0.00280	0	0.00092	0
Catskill	0.01403	0.00296	0.00079	0
Albany	0.00127	0.00607	0.00039	0

Table E-13 American Shad Temporal Distribution Indices Based on Long River Survey, 1974-2013

Week	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
18	0.19600	0.41939	0.07711	0.05346	0.00052	0	0	0
19	0.30700	0.06728	0.12873	0.32533	0.01107	0.10530	0	0
20	0.26368	0.36859	0.25713	0.17089	0.08897	0.21377	0.00012	0
21	0.14087	0.03691	0.21817	0.14123	0.14131	0.18221	0.00020	0
22	0.05604	0.07149	0.17035	0	0.21915	0.23833	0.00005	0
23	0.03007	0.02069	0.09055	0.28185	0.15646	0.08371	0.03643	0
24	0.00511	0.01565	0.05354	0.02723	0.19273	0.09990	0.12390	0.32026
25	0.00110	0	0.00353	0	0.11848	0.07678	0.30585	0.67974
26	0.00014	NS	0.00089	NS	0.07131	NS	0.53345	NS

NS = No sampling in week 26 during 2013 LRS.

Table E-14 American Shad Geographical Distribution Indices Based on Long River Survey, 1974-2013

Region	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
Yonkers	0.00050	0	0.00015	0	0.00013	0	0.00296	0
Tappan Zee	0.00011	0	0.00051	0	0.00047	0	0.00428	0
Croton-Haverstraw	0.00003	0	0.00176	0	0.00172	0.00186	0.00666	0
Indian Point	0.00031	0	0.00787	0	0.00806	0.00120	0.01531	0.00300
West Point	0.00103	0	0.01071	0	0.01109	0.00097	0.03537	0
Cornwall	0.00091	0.34270	0.00713	0	0.01904	0.00726	0.04242	0.02121
Poughkeepsie	0.00440	0	0.04832	0	0.05188	0.01594	0.11180	0.10736
Hyde Park	0.00347	0	0.02540	0	0.05690	0.02302	0.08645	0.03137
Kingston	0.04029	0.00219	0.07265	0.07944	0.11961	0.07259	0.11742	0.10069
Saugerties	0.22571	0.01400	0.15252	0.27759	0.25819	0.22292	0.22221	0.25877
Catskill	0.28926	0.58334	0.25429	0.01941	0.37391	0.33425	0.28834	0.25082
Albany	0.43399	0.05776	0.41870	0.62357	0.09902	0.32000	0.06678	0.22679

Table E-15 American Shad Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year	
	1974-2012	2013
Yonkers	0.00583	0
Tappan Zee	0.06617	0.02272
Croton-Haverstraw	0.06707	0.05070
Indian Point	0.02524	0.01769
West Point	0.01465	0.00506
Cornwall	0.12369	0.19170
Poughkeepsie	0.07944	0.11238
Hyde Park	0.01136	0.00536
Kingston	0.06654	0.01653
Saugerties	0.18029	0.21065
Catskill	0.20751	0.28802
Albany	0.15220	0.07918

Table E-16 *Alosa* spp. Temporal Distribution Indices Based on Long River Survey, 1974-2013

Week	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
18	0.22439	0.82681	0.04816	0.11756	0.00365	0.01076	0	--[1]
19	0.19517	0.09229	0.11101	0.04355	0.02003	0.06566	0.00010	--
20	0.31588	0.06077	0.28970	0.05930	0.07248	0.08125	0.00008	--
21	0.10652	0.01557	0.27285	0.19800	0.14281	0.19562	0.00090	--
22	0.07951	0.00346	0.14466	0.52400	0.22782	0.23721	0.00017	--
23	0.07204	0.00095	0.10381	0.05561	0.20789	0.35154	0.00081	--
24	0.00617	0.00013	0.02445	0.00027	0.16449	0.01041	0.01894	--
25	0.00024	0.00003	0.00472	0.00171	0.09900	0.04755	0.08946	--
26	0.00010	NS	0.00063	NS	0.06183	NS	0.88954	NS

[1] No *Alosa* spp. young-of-year were collected within the temporal limits of this index in 2013.

NS = No sampling in week 26 during 2013 LRS.

Table E-17 *Alosa* spp. Geographical Distribution Indices Based on Long River Survey, 1974-2013

Region	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
Yonkers	0.00087	0	0.00469	0.00344	0.00627	0.00089	0.00052	--[1]
Tappan Zee	0.00004	0	0.00181	0.00013	0.00715	0.00197	0.00011	--
Croton-Haverstraw	0.00003	0.00002	0.00190	0.00031	0.00745	0.00431	0.00041	--
Indian Point	0.00009	0	0.00316	0.00060	0.01694	0.04414	0.00052	--
West Point	0.00027	0	0.00872	0.00130	0.02541	0.03889	0.01645	--
Cornwall	0.00019	0.00007	0.00876	0.00252	0.03201	0.03974	0.01510	--
Poughkeepsie	0.01021	0	0.03996	0.01600	0.12656	0.28804	0.07250	--
Hyde Park	0.00637	0.00022	0.04077	0.01266	0.10135	0.14941	0.08698	--
Kingston	0.02526	0.02322	0.07074	0.11647	0.15650	0.14932	0.16367	--
Saugerties	0.12932	0.36037	0.17715	0.12888	0.22909	0.10568	0.22692	--
Catskill	0.56863	0.43087	0.33809	0.44179	0.24262	0.14920	0.34555	--
Albany	0.25871	0.18523	0.30425	0.27590	0.04865	0.02842	0.07126	--

[1] No *Alosa* spp. young-of-year were collected within the temporal limits of this index in 2013.

Table E-18 *Alosa* spp. Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year	
	1974-2012	2013
Yonkers	0	0
Tappan Zee	0.00050	0
Croton-Haverstraw	0.00013	0
Indian Point	0.00056	0
West Point	0.00564	0
Cornwall	0.11548	0
Poughkeepsie	0.05330	0.45182
Hyde Park	0.00752	0
Kingston	0.08822	0.54818
Saugerties	0.18358	0
Catskill	0.36156	0
Albany	0.18350	0

Table E-19 Alewife Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year	
	1974-2012	2013
Yonkers	0.00347	0
Tappan Zee	0.10924	0.23628
Croton-Haverstraw	0.15659	0.54485
Indian Point	0.05445	0
West Point	0.02772	0
Cornwall	0.13121	0.16785
Poughkeepsie	0.07848	0.00537
Hyde Park	0.01577	0.00844
Kingston	0.07420	0
Saugerties	0.18096	0
Catskill	0.13702	0.03721
Albany	0.03088	0

Table E-20 Blueback Herring Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year	
	1974-2012	2013
Yonkers	0.00172	0
Tappan Zee	0.03168	0
Croton-Haverstraw	0.01199	0.28377
Indian Point	0.01568	0
West Point	0.02587	0
Cornwall	0.08393	0.01093
Poughkeepsie	0.12914	0.31885
Hyde Park	0.03329	0.00992
Kingston	0.18121	0.10069
Saugerties	0.18652	0.06004
Catskill	0.18442	0.05450
Albany	0.11455	0.16130

Table E-21 Gizzard Shad Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year		Yearling and Older	
	1974-2012	2013	1974-2012	2013
Yonkers	0.00599	0	0.00577	0
Tappan Zee	0.19566	0.68081	0.09604	0.06993
Croton-Haverstraw	0.11017	0	0.18966	0.14190
Indian Point	0.06384	0	0.05176	0.44253
West Point	0.03742	0	0.03581	0.03894
Cornwall	0.08669	0.31919	0.17850	0.09836
Poughkeepsie	0.22725	0	0.14912	0.13105
Hyde Park	0.00690	0	0.00988	0.00916
Kingston	0.05834	0	0.05615	0.03180
Saugerties	0.08928	0	0.10849	0
Catskill	0.04852	0	0.03253	0.03634
Albany	0.06994	0	0.08630	0

Table E-22 Rainbow Smelt Temporal Distribution Indices Based on Long River Survey, 1974-2013

Week	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
18	0.03957	--[1]	0.69391	0	0.07541	--[1]	0	--[1]
19	0.95809	--	0.21790	0	0.15019	--	0.00013	--
20	0	--	0.06783	0	0.19350	--	0.00002	--
21	0.00234	--	0.00786	0	0.18431	--	0.00222	--
22	0	--	0.00243	0	0.15550	--	0.01413	--
23	0	--	0	0	0.10114	--	0.03356	--
24	0	--	0.00978	1	0.07954	--	0.11077	--
25	0	--	0.00029	0	0.04446	--	0.36929	--
26	0	NS	0	NS	0.01595	NS	0.46988	NS

[1] No rainbow smelt eggs, post yolk-sac larvae, or young-of-year were collected in 2013.

NS = No sampling in week 26 during 2013 LRS.

Table E-23 Rainbow Smelt Geographical Distribution Indices Based on Long River Survey, 1974-2013

Region	Eggs		Yolk-sac Larvae		Post Yolk-sac Larvae		Young-of-Year	
	1974-2012	2013	1974-2012	2013	1974-2012	2013	1974-2012	2013
Yonkers	0	--[1]	0.00080	0	0.04248	--[1]	0.10349	--[1]
Tappan Zee	0	--	0.00728	0	0.12609	--	0.18854	--
Croton-Haverstraw	0.00234	--	0.00631	0	0.07782	--	0.13802	--
Indian Point	0	--	0.03463	0	0.12192	--	0.14450	--
West Point	0	--	0.05207	0	0.07569	--	0.11124	--
Cornwall	0	--	0.04964	0	0.11478	--	0.13313	--
Poughkeepsie	0	--	0.26209	0	0.22658	--	0.10991	--
Hyde Park	0	--	0.19435	0	0.08111	--	0.04019	--
Kingston	0.06470	--	0.14259	0	0.07031	--	0.01542	--
Saugerties	0.74244	--	0.14049	1	0.04575	--	0.01522	--
Catskill	0.10925	--	0.09998	0	0.01629	--	0.00035	--
Albany	0.08127	--	0.00976	0	0.00118	--	0	--

[1] No rainbow smelt eggs, post yolk-sac larvae, or young-of-year were collected in 2013.

Table E-24 Rainbow Smelt Geographical Distribution Indices Based on Fall Juvenile Survey, 1979-2013

Region	Young-of-Year		Yearling and Older	
	1979-2012	2013	1979-2012	2013
Yonkers	0.03811	--[1]	0	--[1]
Tappan Zee	0.02716	--	0	--
Croton-Haverstraw	0.00993	--	0.00211	--
Indian Point	0.06389	--	0.13066	--
West Point	0.36799	--	0.48710	--
Cornwall	0.36955	--	0.08808	--
Poughkeepsie	0.10437	--	0.22565	--
Hyde Park	0.01847	--	0.06600	--
Kingston	0.00014	--	0.00040	--
Saugerties	0.00025	--	0	--
Catskill	0	--	0	--
Albany	0.00014	--	0	--

[1] No rainbow smelt were collected in the 2013 FJS.

Table E-25 Hogchoker Geographical Distribution Indices Based on Fall Juvenile Survey, 1979-2013

Region	Young-of-Year		Yearling and Older	
	1979-2012	2013	1979-2012	2013
Yonkers	0.02254	0	0.08749	0.12025
Tappan Zee	0.07794	0	0.29650	0.23937
Croton-Haverstraw	0.05650	0.00406	0.11740	0.03975
Indian Point	0.15287	0.04169	0.13945	0.10170
West Point	0.16368	0.15428	0.06763	0.10494
Cornwall	0.14709	0.10506	0.09943	0.10796
Poughkeepsie	0.13183	0.22740	0.07096	0.09637
Hyde Park	0.07865	0.01991	0.02107	0.03188
Kingston	0.06993	0.24785	0.04134	0.05908
Saugerties	0.07683	0.10363	0.03678	0.06125
Catskill	0.01624	0.07460	0.01174	0.01170
Albany	0.00590	0.02152	0.01020	0.02575

Table E-26 Spottail Shiner Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year		Yearling and Older	
	1974-2012	2013	1974-2012	2013
Yonkers	0.00087	0	0.00721	0
Tappan Zee	0.00466	0	0.02020	0
Croton-Haverstraw	0.01171	0.00481	0.01804	0.03281
Indian Point	0.01295	0.03694	0.01862	0
West Point	0.01468	0.04886	0.01723	0.09455
Cornwall	0.03026	0.00445	0.05661	0.03033
Poughkeepsie	0.08641	0.12088	0.09390	0.24244
Hyde Park	0.02988	0.01740	0.02213	0.03813
Kingston	0.09845	0.05176	0.06527	0.16178
Saugerties	0.23771	0.41049	0.25560	0
Catskill	0.21758	0.21689	0.21791	0.15126
Albany	0.25484	0.08753	0.20729	0.24869

Table E-27 White Catfish Geographical Distribution Indices Based on Fall Juvenile Survey, 1979-2013

Region	Young-of-Year		Yearling and Older	
	1979-2012	2013	1979-2012	2013
Yonkers	0	0	0.00706	0
Tappan Zee	0.00361	0	0.12505	0.36842
Croton-Haverstraw	0.00100	0	0.12369	0.12860
Indian Point	0.00628	0	0.08500	0.21037
West Point	0.01986	0.19081	0.03593	0
Cornwall	0.03305	0.30479	0.05572	0
Poughkeepsie	0.12096	0.21877	0.06684	0.04335
Hyde Park	0.06478	0.03605	0.04731	0
Kingston	0.08167	0	0.06035	0
Saugerties	0.17746	0.08288	0.08789	0
Catskill	0.28865	0.04801	0.20173	0.17784
Albany	0.20267	0.11868	0.10342	0.07142

Table E-28 Weakfish Geographical Distribution Indices Based on Fall Juvenile Survey, 1979-2013

Region	Young-of-Year		Yearling and Older	
	1979-2012	2013	1979-2012	2013
Yonkers	0.38319	0.37558	0.54357	--[1]
Tappan Zee	0.27262	0.30571	0.21170	--
Croton-Haverstraw	0.08951	0.05080	0.03127	--
Indian Point	0.13699	0.23394	0.02028	--
West Point	0.08099	0.01530	0.17958	--
Cornwall	0.02659	0.01867	0.01359	--
Poughkeepsie	0.00828	0	0	--
Hyde Park	0.00086	0	0	--
Kingston	0.00080	0	0	--
Saugerties	0.00006	0	0	--
Catskill	0.00013	0	0	--
Albany	0	0	0	--

[1] No weakfish yearling and older were collected in within the temporal limits of this index in 2013.

Table E-29 Bluefish Geographical Distribution Indices Based on Beach Seine Survey, 1974-2013

Region	Young-of-Year	
	1974-2012	2013
Yonkers	0.09555	0.10151
Tappan Zee	0.54085	0.58692
Croton-Haverstraw	0.29571	0.15535
Indian Point	0.04313	0.09938
West Point	0.00893	0.05684
Cornwall	0.01207	0
Poughkeepsie	0.00288	0
Hyde Park	0.00002	0
Kingston	0	0
Saugerties	0.00086	0
Catskill	0	0
Albany	0	0

Appendix F

Annual Abundance Indices

APPENDIX F

LIST OF TABLES

Table F-1 Striped Bass Indices of Annual Abundance Based on Long River Survey and Beach Seine Survey, 1974-2013

	Long River Survey						Beach Seine Survey	
	Egg		Yolk-Sac Larvae		Post Yolk-Sac Larvae		Juvenile	
	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.
1974	0.062	0.044	0.080	0.018	0.424	0.033	5.652	0.869
1975	0.076	0.012	0.487	0.031	0.694	0.044	4.557	0.301
1976	0.097	0.011	0.253	0.014	0.265	0.017	3.445	0.392
1977	0.195	0.022	0.566	0.029	0.605	0.036	5.919	0.411
1978	0.077	0.010	0.306	0.019	0.538	0.038	9.115	1.884
1979	0.075	0.008	0.359	0.022	0.468	0.032	3.760	0.756
1980	0.072	0.009	0.319	0.024	0.833	0.062	5.605	0.829
1981	0.137	0.015	0.486	0.055	2.482	0.116	6.611	0.912
1982	0.073	0.007	0.745	0.078	0.825	0.061	3.826	0.539
1983	0.276	0.189	0.391	0.026	0.589	0.033	6.580	1.249
1984	0.152	0.019	0.358	0.030	0.867	0.096	5.059	1.008
1985	0.050	0.005	0.202	0.017	0.405	0.033	1.069	0.237
1986	0.060	0.008	0.421	0.032	0.721	0.036	1.618	0.388
1987	0.059	0.007	1.449	0.085	1.697	0.066	12.823	2.245
1988	0.024	0.008	0.706	0.068	1.481	0.139	4.912	0.607
1989	0.588	0.269	2.941	0.277	4.540	0.344	5.665	0.897
1990	1.219	0.182	3.271	0.295	5.642	0.535	6.415	0.703
1991	0.363	0.064	2.855	0.257	8.005	0.770	5.032	1.070
1992	0.874	0.154	3.884	0.219	6.380	0.426	3.678	0.581
1993	0.633	0.122	4.812	0.969	8.247	0.727	7.496	1.626
1994	9.825	1.869	3.678	0.526	8.454	0.795	5.880	1.056
1995	6.266	1.010	1.305	0.199	3.942	0.389	6.043	0.903
1996	4.497	0.649	12.743	1.796	15.404	1.465	1.252	0.330
1997	1.029	0.185	1.795	0.296	4.887	0.745	9.185	0.829
1998	1.131	0.343	3.173	0.548	6.133	0.490	6.287	0.709
1999	0.460	0.087	4.265	0.393	14.788	1.343	7.621	1.486
2000	2.144	0.194	8.061	0.817	25.886	2.823	2.320	0.691
2001	1.030	0.235	9.057	0.748	21.999	1.364	14.215	1.551
2002	0.291	0.042	0.879	0.054	2.625	0.151	7.649	0.860

Continued

	Long River Survey						Beach Seine Survey	
	Egg		Yolk-Sac Larvae		Post Yolk-Sac Larvae		Juvenile	
	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.
2003	8.721	4.871	5.889	0.634	7.185	0.718	9.834	1.554
2004	2.018	0.402	4.534	0.372	6.254	0.352	3.752	0.822
2005	0.960	0.158	3.786	0.874	7.169	0.621	11.582	1.469
2006	0.361	0.051	0.752	0.080	1.727	0.102	4.171	0.722
2007	0.920	0.196	6.353	1.267	9.157	0.600	7.201	0.961
2008	0.580	0.106	1.268	0.169	3.995	0.476	4.203	0.548
2009	0.827	0.107	2.871	0.259	8.256	1.150	2.768	0.252
2010	2.534	0.437	4.448	0.494	6.636	0.656	5.380	0.799
2011	3.107	0.648	1.302	0.165	2.390	0.224	2.040	0.424
2012	1.324	0.253	0.386	0.035	1.890	0.112	3.559	0.383
2013	2.733	0.454	3.574	0.430	3.004	0.193	2.184	0.681

Table F-2 White Perch Indices of Annual Abundance Based on Long River Survey and Beach Seine Survey, 1974-2013

	Long River Survey						Beach Seine Survey			
	Egg		Yolk-Sac Larvae		Post Yolk-Sac Larvae		Juvenile		Yearling	
	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.
1974	0.122	0.049	0.040	0.010	0.464	0.037	4.091	0.556	9.57	2.24
1975	0.335	0.095	0.198	0.016	1.783	0.147	8.040	1.954	2.68	1.41
1976	0.480	0.092	0.388	0.015	2.214	0.239	9.537	1.341	3.31	0.43
1977	0.112	0.019	0.264	0.014	2.431	0.128	6.782	1.114	0.45	0.07
1978	0.687	0.083	0.261	0.021	3.438	0.195	13.934	2.838	4.92	2.37
1979	0.533	0.070	0.336	0.017	3.571	0.103	17.033	2.747	5.31	1.63
1980	0.411	0.038	0.328	0.015	2.954	0.110	10.682	2.306	3.24	0.94
1981	1.282	0.080	0.360	0.032	3.467	0.174	10.297	1.291	3.22	0.62
1982	1.374	0.158	0.986	0.050	5.757	0.221	9.995	1.139	4.31	0.80
1983	1.089	0.084	0.776	0.040	2.977	0.101	10.363	2.016	4.08	1.60
1984	2.691	0.659	0.310	0.015	2.754	0.119	4.175	0.684	4.31	1.11
1985	1.036	0.117	0.463	0.040	5.640	0.214	4.353	1.076	1.47	0.53
1986	2.306	0.338	1.375	0.080	8.106	0.378	5.597	1.129	1.71	0.43
1987	0.528	0.063	0.483	0.022	3.974	0.119	8.880	1.678	2.21	0.26
1988	0.781	0.104	0.381	0.037	2.905	0.147	7.606	1.296	1.23	0.25
1989	0.171	0.014	0.568	0.051	4.057	0.374	6.281	1.715	2.84	0.51
1990	1.633	0.350	0.460	0.034	2.919	0.261	3.844	0.416	2.25	0.59
1991	0.443	0.059	0.241	0.017	3.637	0.236	4.033	0.754	1.57	0.43
1992	0.665	0.062	1.052	0.062	4.921	0.202	3.677	0.645	1.34	0.18
1993	0.431	0.060	0.792	0.044	4.958	0.185	5.842	0.949	1.89	0.55
1994	0.378	0.035	0.812	0.043	4.106	0.173	2.837	0.581	0.65	0.19
1995	0.454	0.070	0.427	0.020	2.506	0.108	3.209	0.484	1.14	0.34
1996	1.071	0.134	0.721	0.051	6.123	0.269	0.309	0.125	0.29	0.10
1997	0.265	0.047	0.127	0.005	1.461	0.075	3.912	0.558	0.45	0.07
1998	0.370	0.056	0.192	0.014	2.300	0.142	1.930	0.486	1.39	0.29
1999	0.192	0.026	0.210	0.017	2.696	0.152	11.218	2.992	1.29	0.43
2000	0.396	0.030	0.480	0.027	4.841	0.504	1.766	0.391	0.89	0.29
2001	0.091	0.010	0.253	0.017	2.997	0.237	6.997	0.817	0.42	0.13
2002	0.397	0.037	0.677	0.027	2.125	0.147	6.766	1.038	3.33	0.87

Continued

	Long River Survey						Beach Seine Survey			
	Egg		Yolk-Sac Larvae		Post Yolk-Sac Larvae		Juvenile		Yearling	
	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.
2003	0.329	0.034	0.478	0.023	2.845	0.171	15.671	3.697	0.71	0.13
2004	0.355	0.036	0.526	0.036	2.782	0.127	4.203	0.985	3.10	1.03
2005	0.198	0.013	0.470	0.029	2.233	0.133	6.441	0.998	0.313	0.085
2006	0.465	0.040	0.249	0.014	0.335	0.074	3.162	0.521	1.545	0.201
2007	0.075	0.012	0.186	0.018	2.264	0.180	1.519	0.260	0.391	0.127
2008	0.739	0.070	0.338	0.030	1.777	0.114	6.729	1.362	0.533	0.533
2009	0.473	0.034	0.265	0.017	1.823	0.116	4.852	0.947	1.462	0.322
2010	0.329	0.050	0.367	0.025	2.837	0.149	5.280	0.686	0.561	0.103
2011	0.758	0.155	0.731	0.042	2.518	0.157	3.056	0.889	2.179	1.265
2012	0.163	0.027	0.109	0.009	1.403	0.068	1.766	0.238	0.889	0.180
2013	0.462	0.074	0.389	0.048	1.914	0.124	1.130	0.500	0.931	0.381

Table F-3 Atlantic Tomcod Indices of Annual Abundance Based on Long River Survey, 1974-2013

	Long River Survey	
	Post Yolk-Sac Larvae and Juvenile	
	Index	Std. Err.
1974	0.093	0.016
1975	0.035	0.009
1976	0.011	0.003
1977	0.412	0.267
1978	0.110	0.031
1979	0.026	0.006
1980	0.234	0.078
1981	0.149	0.037
1982	0.064	0.024
1983	0.035	0.012
1984	0.155	0.070
1985	0.149	0.027
1986	0.077	0.010
1987	0.319	0.049
1988	0.151	0.034
1989	0.365	0.089
1990	0.306	0.135
1991	0.193	0.029
1992	0.065	0.021
1993	0.214	0.061
1994	0.106	0.022
1995	0.148	0.024
1996	0.094	0.014
1997	0.049	0.011
1998	0.036	0.008
1999	0.030	0.007
2000	0.009	0.002
2001	0.176	0.029
2002	0.005	0.001
2003	0.042	0.006
2004	0.088	0.012
2005	0.088	0.014
2006	0.022	0.005
2007	0.011	0.001
2008	0.035	0.010
2009	0.029	0.005
2010	0.043	0.006

Continued

	Long River Survey	
	Post Yolk-Sac Larvae and Juvenile	
	Index	Std. Err.
2011	0.043	0.008
2012	0.018	0.005
2013	0.008	0.001

Table F-4 Bay Anchovy Indices of Annual Abundance Based on Fall Juvenile Survey, 1979-2013

	Fall Juvenile Survey	
	Juvenile	
	Index	Std. Err.
1979	63	10
1980	216	53
1981	149	24
1982	197	25
1983	115	32
1984	160	33
1985	153	16
1986	109	16
1987	196	42
1988	341	51
1989	289	40
1990	110	12
1991	111	8
1992	147	35
1993	161	20
1994	138	33
1995	266	44
1996	76	20
1997	148	27
1998	132	20
1999	98	25
2000	37	4
2001	63	10
2002	120	16
2003	80	7
2004	147	48
2005	68	7
2006	106	32
2007	163	19
2008	133	14
2009	78	12
2010	85	20
2011	28	12
2012	267	26
2013	84	9

Table F-5 American Shad Indices of Annual Abundance Based on Long River Survey and Beach Seine Survey, 1974-2013

	Long River Survey						Beach Seine Survey	
	Egg		Yolk-Sac Larvae		Post Yolk-Sac Larvae		Juvenile	
	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.
1974	0.097	0.031	0.004	0.001	0.171	0.065	11.499	0.825
1975	0.060	0.016	0.025	0.004	0.276	0.176	10.630	1.431
1976	0.037	0.009	0.017	0.002	0.155	0.049	13.325	0.869
1977	0.036	0.004	0.024	0.002	0.170	0.033	13.702	1.388
1978	0.044	0.008	0.034	0.003	0.092	0.031	23.671	2.658
1979	0.045	0.007	0.053	0.006	0.492	0.069	11.645	1.741
1980	0.046	0.009	0.111	0.012	0.479	0.216	10.747	2.464
1981	0.161	0.075	0.106	0.012	0.777	0.309	17.615	2.167
1982	0.123	0.041	0.149	0.016	0.586	0.120	16.312	1.919
1983	0.356	0.114	0.134	0.015	0.573	0.092	19.679	3.887
1984	0.472	0.112	0.240	0.019	0.376	0.168	8.686	1.839
1985	0.262	0.039	0.247	0.041	0.672	0.165	8.078	1.297
1986	0.770	0.325	0.122	0.015	1.054	0.150	19.060	3.735
1987	0.349	0.077	0.063	0.007	0.177	0.077	13.473	2.275
1988	0.259	0.051	0.093	0.030	0.729	0.344	7.717	1.010
1989	0.327	0.063	0.075	0.010	1.040	0.794	22.052	2.414
1990	0.270	0.062	0.400	0.053	1.170	0.733	18.674	1.742
1991	0.086	0.016	0.042	0.008	0.319	0.115	11.966	3.155
1992	0.075	0.021	0.082	0.011	0.622	0.213	13.923	1.051
1993	0.120	0.031	0.011	0.002	0.228	0.116	7.065	0.869
1994	0.227	0.036	0.038	0.005	0.366	0.126	17.557	3.276
1995	0.121	0.030	0.021	0.003	0.191	0.060	3.786	0.433
1996	0.262	0.042	0.012	0.003	0.260	0.061	11.773	1.928
1997	0.036	0.005	0.008	0.001	0.153	0.033	12.537	2.036
1998	0.086	0.012	0.008	0.001	0.089	0.028	2.361	0.415
1999	0.085	0.018	0.003	0.001	0.184	0.066	8.813	2.441
2000	0.119	0.015	0.013	0.002	0.090	0.026	5.925	0.930
2001	0.039	0.012	0.014	0.004	0.459	0.182	24.402	1.827
2002	0.034	0.004	0.016	0.003	0.100	0.037	4.792	0.468

Continued

	Long River Survey						Beach Seine Survey	
	Egg		Yolk-Sac Larvae		Post Yolk-Sac Larvae		Juvenile	
	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.	Index	Std. Err.
2003	0.072	0.019	0.011	0.001	0.093	0.025	8.686	1.204
2004	0.033	0.008	0.008	0.001	0.141	0.062	3.397	0.613
2005	0.042	0.005	0.004	0.001	0.032	0.015	3.208	0.601
2006	0.008	0.001	0.001	0.000	0.009	0.004	0.631	0.116
2007	0.010	0.007	0.002	0.001	0.021	0.022	1.522	0.370
2008	0.011	0.003	0.001	0.000	0.006	0.003	0.774	0.143
2009	0.007	0.002	0.003	<0.001	0.021	0.010	1.880	0.389
2010	0.005	0.001	0.001	<0.001	0.010	0.012	1.826	0.395
2011	0.040	0.005	0.003	0.001	0.016	0.011	1.056	0.229
2012	0.013	0.005	0.001	<0.001	0.002	0.001	0.689	0.175
2013	0.015	0.007	0.002	0.001	0.022	0.014	0.775	0.284

Table F-6 Alewife Indices of Annual Abundance Based on Fall Juvenile Survey, 1979-2013, and Beach Seine Survey, 1974-2013

	Fall Juvenile Survey		Beach Seine Survey	
	Juvenile		Juvenile	
	Index	Std. Err.	Index	Std. Err.
1974			2.917	0.439
1975			2.473	0.404
1976			2.400	0.632
1977			4.182	0.605
1978			5.485	0.971
1979	0.199	0.077	1.347	0.232
1980	0.686	0.353	0.498	0.161
1981	0.634	0.214	4.148	0.936
1982	0.275	0.084	0.794	0.237
1983	0.188	0.067	1.791	0.273
1984	0.213	0.125	0.490	0.136
1985	0.930	0.407	0.741	0.173
1986	0.263	0.079	0.834	0.505
1987	0.524	0.268	0.651	0.121
1988	0.268	0.129	0.417	0.089
1989	0.226	0.068	0.163	0.040
1990	0.350	0.137	1.047	0.167
1991	0.328	0.115	3.473	0.569
1992	0.165	0.084	0.299	0.118
1993	0.234	0.083	0.544	0.159
1994	0.120	0.062	1.402	0.343
1995	0.113	0.034	1.136	0.346
1996	0.489	0.146	0.103	0.040
1997	0.319	0.101	2.262	0.439
1998	0.025	0.015	0.214	0.154
1999	0.697	0.173	4.533	1.073
2000	0.203	0.077	0.597	0.315
2001	0.871	0.720	2.733	0.783
2002	0.017	0.014	0.580	0.102
2003	0.286	0.117	3.392	0.895
2004	0.100	0.039	1.274	0.355
2005	0.338	0.092	5.289	1.232
2006	0.037	0.017	0.795	0.435
2007	1.870	1.144	6.688	2.003
2008	0.800	0.542	3.888	0.999
2009	0.038	0.031	1.371	0.467
2010	0.798	0.337	7.282	2.028
2011	0.312	0.111	1.791	0.358

Continued

	Fall Juvenile Survey		Beach Seine Survey	
	Juvenile		Juvenile	
	Index	Std. Err.	Index	Std. Err.
2012	0.151	0.055	0.249	0.090
2013	0.041	0.026	0.253	0.091

Table F-7 Blueback Herring Indices of Annual Abundance Based on Fall Juvenile Survey, 1979-2013, and Beach Seine Survey, 1974-2013

	Fall Juvenile Survey		Beach Seine Survey	
	Juvenile		Juvenile	
	Index	Std. Err.	Index	Std. Err.
1974			23.509	3.394
1975			69.660	9.490
1976			155.551	23.842
1977			219.365	26.383
1978			229.189	44.491
1979	3.695	0.746	54.451	8.318
1980	2.606	0.753	100.836	53.797
1981	21.197	5.861	181.931	72.898
1982	10.331	2.061	121.724	31.431
1983	6.082	1.073	190.860	41.849
1984	20.385	3.673	22.662	5.412
1985	17.424	4.584	18.816	3.904
1986	6.482	1.383	14.102	4.410
1987	25.608	12.357	69.798	15.687
1988	26.693	4.297	47.408	14.021
1989	16.825	5.408	35.877	8.094
1990	29.688	10.639	97.854	13.970
1991	12.648	4.469	47.440	11.057
1992	15.523	3.874	31.096	6.530
1993	7.717	1.594	35.277	5.517
1994	5.765	1.899	88.839	13.782
1995	1.266	0.417	38.176	23.296
1996	50.160	15.888	36.708	17.548
1997	7.301	1.428	162.109	35.436
1998	0.032	0.029	1.282	0.314
1999	2.073	0.783	58.668	17.791
2000	2.677	1.163	25.980	14.975
2001	5.845	4.998	57.605	11.398
2002	0.797	0.546	12.630	5.767
2003	5.920	1.891	119.197	27.386
2004	1.523	0.347	49.563	11.708
2005	2.332	1.049	65.857	20.089
2006	0.525	0.146	8.278	3.437
2007	5.236	0.907	71.601	9.047
2008	5.557	1.353	39.985	8.850
2009	0.866	0.247	3.881	1.136
2010	4.001	2.107	66.642	20.062
2011	13.627	1.956	41.617	6.286

Continued

	Fall Juvenile Survey		Beach Seine Survey	
	Juvenile		Juvenile	
	Index	Std. Err.	Index	Std. Err.
2012	4.316	1.428	34.657	10.547
2013	0.017	0.017	0.777	0.452

Table F-8 Rainbow Smelt Indices of Annual Abundance Based on Fall Juvenile Survey, 1979-2013, and Long River Survey, 1974-2013

	Fall Juvenile Survey		Long River Survey	
	Juvenile		Juvenile	
	Index	Std. Err.	Index	Std. Err.
1974			0.020	0.004
1975			0.001	0.000
1976			0.000	0.000
1977			0.006	0.002
1978			0.069	0.006
1979	0.226	0.092	0.020	0.003
1980	0.099	0.088	0.031	0.002
1981	0.000	0.000	0.001	0.000
1982	0.129	0.055	0.002	0.000
1983	0.000	0.000	0.000	0.000
1984	0.419	0.165	0.003	0.000
1985	0.074	0.057	0.002	0.000
1986	0.959	0.165	0.016	0.001
1987	0.122	0.065	0.006	0.001
1988	0.041	0.027	0.051	0.008
1989	0.000	0.000	0.000	0.000
1990	1.140	0.340	0.027	0.002
1991	0.000	0.000	0.010	0.003
1992	6.721	2.340	0.045	0.005
1993	1.190	0.563	0.011	0.003
1994	0.104	0.104	0.008	0.002
1995	0.000	0.000	0.010	0.002
1996	0.000	0.000	0.000	0.000
1997	0.000	0.000	0.000	0.000
1998	0.000	0.000	0.000	0.000
1999	0.000	0.000	0.000	0.000
2000	0.000	0.000	0.000	0.000
2001	0.000	0.000	0.000	0.000
2002	0.000	0.000	0.000	0.000
2003	0.000	0.000	0.000	0.000
2004	0.000	0.000	0.000	0.000
2005	0.000	0.000	0.000	0.000
2006	0.000	0.000	0.000	0.000
2007	0.000	0.000	0.000	0.000
2008	0.000	0.000	0.000	0.000
2009	0.000	0.000	0.000	0.000
2010	0.000	0.000	0.000	0.000

Continued

	Fall Juvenile Survey		Long River Survey	
	Juvenile		Juvenile	
	Index	Std. Err.	Index	Std. Err.
2011	0.000	0.000	0.000	0.000
2012	0.000	0.000	0.000	0.000
2013	0.000	0.000	0.000	0.000

Table F-9 Hogchoker Indices of Annual Abundance Based on Fall Juvenile Survey, 1974-2013

	Fall Juvenile Survey	
	Juvenile	
	Index	Std. Err.
1974	0.147	0.033
1975	2.748	1.910
1976	0.021	0.017
1977	2.089	1.393
1978	1.925	0.806
1979	0.786	0.172
1980	0.620	0.183
1981	2.735	0.775
1982	0.975	--
1983	6.789	4.522
1984	1.767	0.428
1985	1.396	0.257
1986	3.298	1.587
1987	2.227	0.568
1988	7.832	0.914
1989	1.318	0.406
1990	1.728	1.024
1991	6.772	4.728
1992	0.502	0.234
1993	1.189	0.308
1994	10.079	1.418
1995	0.878	0.333
1996	0.295	0.066
1997	0.026	0.026
1998	0.932	0.129
1999	0.145	0.136
2000	0.983	0.363
2001	1.264	0.426
2002	0.956	0.346
2003	0.511	0.508
2004	0.319	0.079
2005	1.873	0.785
2006	0.402	0.168
2007	1.442	0.774
2008	0.796	0.206
2009	0.878	0.462
2010	2.922	1.435
2011	0.426	0.288

Continued

	Fall Juvenile Survey	
	Juvenile	
	Index	Std. Err.
2012	10.309	4.367
2013	0.455	0.088

Table F-10 Spottail Shiner Indices of Annual Abundance Based on Beach Seine Survey, 1974-2013

	Beach Seine Survey	
	Juvenile	
	Index	Std. Err.
1974	6.406	1.419
1975	13.648	3.194
1976	9.211	1.452
1977	4.860	1.112
1978	12.232	1.725
1979	8.562	1.357
1980	6.785	1.281
1981	19.134	3.977
1982	4.991	0.815
1983	11.890	3.007
1984	8.202	1.942
1985	4.916	0.780
1986	4.629	1.165
1987	5.868	1.403
1988	4.663	0.722
1989	6.626	1.472
1990	9.098	1.505
1991	11.223	1.880
1992	6.987	1.066
1993	6.379	0.797
1994	14.684	2.022
1995	4.875	0.696
1996	1.681	0.632
1997	11.880	1.742
1998	2.478	0.568
1999	24.848	5.432
2000	2.287	0.634
2001	19.556	4.314
2002	12.833	1.847
2003	25.669	4.877
2004	8.613	1.323
2005	13.370	4.976
2006	2.849	0.461
2007	13.419	3.931
2008	18.279	2.781
2009	11.380	5.983
2010	18.328	2.305

Continued

	Beach Seine Survey	
	Juvenile	
	Index	Std. Err.
2011	8.980	2.648
2012	2.521	0.726
2013	0.825	0.284

Table F-11 White Catfish Indices of Annual Abundance Based on Beach Seine Survey, 1974-2013

	Beach Seine Survey Yearling and Older	
	Index	Std. Err.
1974	0.034	0.020
1975	0.021	0.011
1976	0.030	0.010
1977	0.072	0.022
1978	0.069	0.030
1979	0.054	0.028
1980	0.023	0.008
1981	0.050	0.029
1982	0.048	0.026
1983	0.064	0.044
1984	0.019	0.006
1985	0.010	0.005
1986	0.026	0.012
1987	0.031	0.015
1988	0.049	0.018
1989	0.123	0.056
1990	0.010	0.005
1991	0.016	0.008
1992	0.005	0.003
1993	0.013	0.009
1994	0.002	0.002
1995	0.012	0.008
1996	0.028	0.016
1997	0.002	0.001
1998	0.028	0.022
1999	0.000	0.000
2000	0.004	0.003
2001	0.002	0.002
2002	0.009	0.008
2003	0.002	0.001
2004	0.001	0.001
2005	0.000	0.000
2006	0.022	0.013
2007	0.002	0.002
2008	0.002	0.002
2009	0.005	0.003
2010	0.000	0.000

Continued

	Beach Seine Survey	
	Yearling and Older	
	Index	Std. Err.
2011	0.012	0.005
2012	0.002	0.004
2013	0.000	0.000

Table F-12 Weakfish Indices of Annual Abundance Based on Fall Juvenile Survey, 1979-2013

	Fall Juvenile Survey	
	Juvenile	
	Index	Std. Err.
1979	0.133	0.070
1980	0.599	0.284
1981	0.215	0.125
1982	0.663	0.306
1983	0.125	0.088
1984	1.588	0.633
1985	0.977	0.481
1986	0.294	0.105
1987	0.253	0.180
1988	1.444	0.599
1989	0.763	0.248
1990	0.149	0.090
1991	0.100	0.061
1992	0.025	0.017
1993	0.252	0.149
1994	0.130	0.058
1995	0.229	0.128
1996	0.213	0.160
1997	0.156	0.053
1998	0.377	0.277
1999	0.117	0.047
2000	0.167	0.115
2001	0.019	0.009
2002	0.007	0.007
2003	0.095	0.049
2004	0.094	0.062
2005	0.014	0.014
2006	0.011	0.011
2007	0.077	0.054
2008	0.000	0.000
2009	0.044	0.021
2010	0.000	0.000
2011	0.026	0.017
2012	0.006	0.006
2013	0.105	0.049

Table F-13 Bluefish Indices of Annual Abundance Based on Beach Seine Survey, 1974-2013

	Beach Seine Survey	
	Juvenile	
	Index	Std. Err.
1974	0.712	0.210
1975	0.283	0.074
1976	0.189	0.028
1977	0.325	0.097
1978	0.350	0.075
1979	0.217	0.054
1980	0.303	0.053
1981	0.464	0.119
1982	0.295	0.059
1983	0.320	0.101
1984	0.153	0.034
1985	0.245	0.068
1986	0.127	0.054
1987	0.173	0.049
1988	0.176	0.027
1989	0.176	0.043
1990	0.237	0.053
1991	0.156	0.043
1992	0.133	0.050
1993	0.098	0.033
1994	0.058	0.017
1995	0.182	0.043
1996	0.036	0.012
1997	0.185	0.028
1998	0.155	0.026
1999	2.660	1.116
2000	0.065	0.027
2001	0.692	0.242
2002	0.863	0.300
2003	0.204	0.073
2004	0.103	0.037
2005	0.214	0.071
2006	0.206	0.069
2007	0.149	0.026
2008	0.190	0.046
2009	0.217	0.030
2010	0.287	0.072
2011	0.025	0.019

Continued

	Beach Seine Survey	
	Juvenile	
	Index	Std. Err.
2012	0.178	0.050
2013	0.072	0.016

Appendix G

Length Frequency Distribution

APPENDIX G

LIST OF TABLES

APPENDIX G

LIST OF TABLES (CONTINUED)

Table G-1 Length Frequency Distribution of Larval and Young-of-Year Striped Bass in Hudson River Estuary Determined from Long River Survey, 2013

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9
13MAR-15MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20MAR-22MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26MAR-28MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02APR-05APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30APR-03MAY	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
07MAY-10MAY	0	110	252	17	0	0	0	0	0	0	0	0	0	0	0
15MAY-17MAY	0	53	970	731	2	0	0	0	0	0	0	0	0	0	0
21MAY-24MAY	0	22	805	1342	23	0	0	0	0	0	0	0	0	0	0
28MAY-31MAY	0	127	889	1932	168	17	1	0	0	0	1	0	0	0	0
04JUN-07JUN	0	54	950	1534	221	72	8	1	0	0	0	0	0	0	0
11JUN-15JUN	0	42	1276	1271	216	136	82	24	5	1	0	0	0	0	0
18JUN-22JUN	0	149	361	658	172	170	86	44	27	11	4	0	0	0	0
25JUN-28JUN	0	42	735	366	260	175	90	74	26	7	15	1	1	0	0
09JUL-11JUL	0	0	10	65	194	163	52	20	8	8	15	15	6	1	1
24JUL-27JUL	0	0	0	0	2	6	5	11	12	7	16	21	19	19	14
06AUG-09AUG	0	0	0	0	0	0	2	0	1	1	0	9	1	3	1
20AUG-23AUG	0	0	0	0	0	0	0	0	0	0	0	0	3	2	2
04SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	601	6249	7916	1258	739	326	174	79	35	51	46	30	25	24

DATES	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
13MAR-15MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
20MAR-22MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
26MAR-28MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
02APR-05APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
09APR-12APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
16APR-19APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
23APR-26APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
30APR-03MAY	0	0	0	0	0	0	0	0	3	3.8	3.6	3.7	4.1	0.3
07MAY-10MAY	0	0	0	0	0	0	0	0	379	4.5	2.6	4.5	6.4	0.8
15MAY-17MAY	0	0	0	0	0	0	0	0	1756	5.7	3.0	5.8	9.1	0.8
21MAY-24MAY	0	0	0	0	0	0	0	0	2192	6.1	3.0	6.3	9.5	0.9
28MAY-31MAY	0	0	0	0	0	0	0	0	3135	6.2	2.5	6.3	20.0	1.2
04JUN-07JUN	0	0	0	0	0	0	0	0	2840	6.4	2.8	6.2	14.1	1.4
11JUN-15JUN	0	0	0	0	0	0	0	0	3053	6.5	3.1	6.0	19.1	2.0
18JUN-22JUN	0	0	0	0	0	0	0	0	1682	7.5	2.6	6.8	22.0	3.2
25JUN-28JUN	0	0	0	0	0	0	0	0	1792	7.7	2.5	6.2	32.0	3.4
09JUL-11JUL	0	0	0	0	0	0	0	0	558	11.2	5.2	10.1	42.0	4.8
24JUL-27JUL	9	3	3	0	0	0	0	0	147	28.7	8.3	28.0	58.0	11.8
06AUG-09AUG	1	2	2	0	0	0	0	0	23	32.5	12.6	28.0	59.0	13.6
20AUG-23AUG	1	0	1	3	2	0	1	0	16	50.6	31.0	52.0	75.0	14.5
04SEP-06SEP	2	1	0	0	0	2	0	0	11	48.8	40.0	44.0	73.0	11.7
17SEP-20SEP	0	0	2	3	1	0	0	0	7	61.4	58.0	62.0	65.0	2.8
01OCT-04OCT	0	0	0	0	0	0	0	0	0	.	.	.	.	.
	13	6	8	6	3	2	1	0	17594					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-2 Length Frequency Distribution of Young-of-Year Striped Bass in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9
30JUN-04JUL	18	32	31	19	4	0	0	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	4	7	17	33	10	1	1	1	0	0	0	0	0	0	0	0
30JUL-02AUG	0	0	3	10	13	17	21	13	7	1	0	1	0	0	0	0	0
13AUG-17AUG	0	0	1	13	14	8	15	15	11	11	5	4	0	0	0	0	0
27AUG-31AUG	0	0	1	1	1	9	8	14	7	8	1	5	3	2	1	0	0
10SEP-13SEP	0	0	0	0	0	0	1	6	8	10	2	8	8	13	11	5	0
24SEP-27SEP	0	0	0	0	0	0	0	0	1	3	7	4	9	6	8	10	6
07OCT-10OCT	0	0	0	0	0	0	0	0	0	0	11	6	7	8	12	11	6
21OCT-24OCT	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	2	1
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	0	4	3	3	6	4	2
18NOV-21NOV	0	0	0	0	0	0	0	0	0	0	0	1	7	3	5	8	4
	18	36	43	60	65	44	46	49	35	33	26	33	38	36	46	40	19

DATES	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9	130.0-134.9	135.0-139.9	140.0-144.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0	104	19.8	10.0	20.0	34.0	5.2
16JUL-20JUL	0	0	0	0	0	0	0	0	0	0	74	30.1	16.0	30.0	53.0	6.3
30JUL-02AUG	0	0	0	0	0	0	0	0	0	0	86	38.7	21.0	39.5	66.0	8.6
13AUG-17AUG	0	0	0	0	0	0	0	0	0	0	100	43.7	20.0	43.5	68.0	12.0
27AUG-31AUG	0	0	0	0	0	0	0	0	0	0	65	51.2	22.0	49.0	81.0	12.7
10SEP-13SEP	0	0	0	0	0	0	0	0	0	0	74	67.1	41.0	69.5	88.0	12.7
24SEP-27SEP	5	0	0	0	0	0	0	0	0	0	60	77.6	51.0	79.0	98.0	11.9
07OCT-10OCT	8	4	1	1	0	1	0	0	0	0	76	81.6	61.0	81.0	121.0	13.3
21OCT-24OCT	0	0	0	0	1	0	0	0	0	0	9	86.7	74.0	83.0	118.0	12.8
04NOV-08NOV	1	2	0	1	0	0	0	2	0	0	28	85.9	65.0	82.0	133.0	17.3
18NOV-21NOV	1	1	2	1	0	0	0	0	2	0	35	88.1	69.0	86.0	138.0	16.3
	15	7	3	3	1	1	0	2	2	0	711					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-3 Length Frequency Distribution of Young-of-Year Striped Bass in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9
10JUN-13JUN	13	42	17	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	30	36	7	4	0	0	0	0	0	0	0	0	0	0	0
09JUL-11JUL	0	8	28	32	32	12	7	7	2	0	0	0	0	0	0	0
23JUL-26JUL	0	13	19	23	28	20	15	6	12	5	4	1	0	0	1	0
06AUG-09AUG	0	0	5	14	11	10	8	12	11	10	7	5	1	1	0	0
20AUG-23AUG	0	0	0	1	2	9	11	15	17	15	12	12	7	3	2	0
03SEP-06SEP	0	0	0	0	0	0	1	1	2	6	5	8	6	17	11	9
17SEP-20SEP	0	0	0	0	0	0	1	1	10	12	7	9	13	12	9	5
02OCT-04OCT	0	0	0	0	0	0	0	0	1	3	4	7	5	11	11	11
14OCT-17OCT	0	0	0	0	0	0	0	0	1	0	2	9	19	16	14	14
	13	93	105	77	77	51	43	42	56	51	41	51	51	60	48	39

DATES	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9	130.0-134.9	135.0-139.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	0	0	0	0	0	0	73	16.9	7.0	17.0	24.0	3.2
24JUN-26JUN	0	0	0	0	0	0	0	0	0	0	77	20.7	15.0	20.0	33.0	4.0
09JUL-11JUL	0	0	0	0	0	0	0	0	0	0	128	29.7	15.0	29.0	50.0	8.0
23JUL-26JUL	2	1	0	0	0	0	0	0	0	0	151	35.9	15.0	33.0	95.0	14.9
06AUG-09AUG	1	1	0	0	0	0	0	0	0	0	98	44.7	21.0	45.0	97.0	15.1
20AUG-23AUG	1	0	0	0	0	0	0	0	0	0	110	54.9	28.0	54.5	90.0	12.3
03SEP-06SEP	4	1	1	0	0	0	0	0	0	0	74	74.2	42.0	75.5	103.0	12.1
17SEP-20SEP	4	2	1	1	1	0	0	0	0	0	91	70.5	44.0	70.0	113.0	14.1
02OCT-04OCT	11	4	6	2	0	0	0	0	1	0	77	82.6	54.0	83.0	131.0	14.0
14OCT-17OCT	12	15	4	1	3	0	0	1	1	0	113	83.8	53.0	83.0	130.0	13.3
	35	24	12	4	4	0	0	1	2	0	992					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-4 Length Frequency Distribution of Larval and Young-of-Year White Perch in Hudson River Estuary Determined from Long River Survey, 2013

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9
13MAR-15MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20MAR-22MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26MAR-28MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02APR-05APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30APR-03MAY	0	31	2	0	0	0	0	0	0	0	0	0	0	0	0
07MAY-10MAY	0	662	34	0	0	0	0	0	0	0	0	0	0	0	0
15MAY-17MAY	0	307	568	12	0	0	0	0	0	0	0	0	0	0	0
21MAY-24MAY	0	226	579	296	11	0	0	0	0	0	0	0	0	0	0
28MAY-31MAY	0	556	820	332	101	1	0	0	0	0	0	0	0	0	0
04JUN-07JUN	1	812	1089	332	117	18	0	0	0	0	0	0	0	0	0
11JUN-15JUN	0	773	1516	246	148	56	9	3	0	0	0	0	0	0	0
18JUN-22JUN	0	379	582	134	53	25	4	1	0	0	0	0	0	0	0
25JUN-28JUN	0	553	322	264	90	17	14	1	2	0	0	0	0	0	0
09JUL-11JUL	0	4	30	57	45	32	13	2	2	2	1	0	0	0	0
24JUL-27JUL	0	0	0	2	6	35	30	9	0	1	0	0	1	2	0
06AUG-09AUG	0	0	0	0	0	0	2	1	0	1	0	0	3	6	4
20AUG-23AUG	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
04SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	4303	5542	1675	571	184	72	17	4	4	1	0	5	8	4

DATES	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
13MAR-15MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
20MAR-22MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
26MAR-28MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
02APR-05APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
09APR-12APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
16APR-19APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
23APR-26APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
30APR-03MAY	0	0	0	0	0	0	0	0	33	3.2	2.3	3.2	5.0	0.5
07MAY-10MAY	0	0	0	0	0	0	0	0	696	3.3	2.2	3.3	4.2	0.4
15MAY-17MAY	0	0	0	0	0	0	0	0	887	4.3	2.5	4.2	6.5	0.7
21MAY-24MAY	0	0	0	0	0	0	0	0	1112	5.1	2.4	4.8	8.8	1.3
28MAY-31MAY	0	0	0	0	0	0	0	0	1810	4.9	2.3	4.5	10.2	1.5
04JUN-07JUN	0	0	0	0	0	0	0	0	2369	4.8	1.8	4.5	11.2	1.6
11JUN-15JUN	0	0	0	0	0	0	0	0	2751	4.8	2.3	4.3	15.9	1.7
18JUN-22JUN	0	0	0	0	0	0	0	0	1178	5.0	2.5	4.5	14.5	1.7
25JUN-28JUN	0	0	0	0	0	0	0	0	1263	5.1	2.5	4.1	17.5	2.0
09JUL-11JUL	0	0	0	0	0	0	0	0	188	8.5	3.2	8.0	22.0	3.0
24JUL-27JUL	0	0	0	0	0	0	0	0	86	12.8	7.3	12.0	38.0	4.5
06AUG-09AUG	7	8	0	0	0	0	1	0	33	41.1	12.0	44.0	78.0	13.4
20AUG-23AUG	0	0	1	0	0	0	0	0	2	43.5	32.0	43.5	55.0	16.3
04SEP-06SEP	0	0	0	2	1	0	0	0	3	63.0	61.0	63.0	65.0	2.0
17SEP-20SEP	0	0	0	1	0	1	0	0	2	67.0	64.0	67.0	70.0	4.2
01OCT-04OCT	0	0	0	0	0	0	0	0	0	.	.	.	.	.
	7	8	1	3	1	1	1	0	12413					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-5 Length Frequency Distribution of Young-of-Year White Perch in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
30JUN-04JUL	1	1	1	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	4	2	3	3	6	3	1	0	0	0	0	0	0
30JUL-02AUG	0	2	13	1	2	8	8	4	1	1	0	0	0
13AUG-17AUG	0	0	1	2	9	7	5	5	6	1	0	0	0
27AUG-31AUG	0	0	1	3	10	8	4	4	3	1	0	0	0
10SEP-13SEP	0	0	0	0	1	4	7	8	7	6	2	4	1
24SEP-27SEP	0	0	0	0	0	4	0	1	3	5	1	0	1
07OCT-10OCT	0	0	0	0	1	4	3	1	0	2	2	1	2
21OCT-24OCT	0	0	0	0	0	1	0	2	0	0	1	0	1
04NOV-08NOV	0	0	0	0	0	1	0	0	2	2	2	3	8
18NOV-21NOV	0	0	0	0	0	0	0	0	0	3	6	7	12
	5	5	19	9	29	40	28	25	22	21	14	15	25

DATES	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	0	3	17.0	14.0	15.0	22.0	4.4
16JUL-20JUL	0	0	0	0	0	0	22	26.0	12.0	29.0	40.0	9.0
30JUL-02AUG	0	0	0	0	0	0	40	33.1	16.0	36.0	56.0	11.4
13AUG-17AUG	0	0	0	0	0	0	36	39.6	24.0	38.5	55.0	8.7
27AUG-31AUG	0	0	0	0	0	0	34	38.0	24.0	36.0	55.0	8.1
10SEP-13SEP	0	0	0	0	0	0	40	49.9	30.0	49.5	72.0	10.1
24SEP-27SEP	0	0	0	1	0	0	16	54.1	35.0	54.5	90.0	14.1
07OCT-10OCT	3	1	0	1	0	0	21	57.2	32.0	59.0	90.0	18.0
21OCT-24OCT	0	1	1	0	0	0	7	61.7	39.0	64.0	86.0	18.8
04NOV-08NOV	7	4	2	3	0	0	35	72.2	38.0	73.0	92.0	11.6
18NOV-21NOV	16	19	9	11	2	0	86	77.8	55.0	78.5	96.0	9.9
	26	25	12	16	2	0	340					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-6 Length Frequency Distribution of Young-of-Year White Perch in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9
10JUN-13JUN	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	2	2	0	0	0	0	0	0	0	0	0
09JUL-11JUL	1	11	12	15	11	8	0	1	0	0	0	0
23JUL-26JUL	0	1	7	7	12	8	10	5	5	0	0	0
06AUG-09AUG	0	1	0	8	5	4	2	3	9	11	6	0
20AUG-23AUG	0	0	0	0	2	4	14	12	5	6	7	4
03SEP-06SEP	0	0	0	0	0	1	0	0	5	4	3	5
17SEP-20SEP	0	0	0	0	0	0	0	1	4	3	3	10
02OCT-04OCT	0	0	0	0	0	0	0	2	1	1	2	5
14OCT-17OCT	0	0	0	0	0	0	0	2	2	0	3	8
	1	15	21	30	30	25	26	26	31	25	24	32

DATES	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	0	0	0	.	.	.	.	.
24JUN-26JUN	0	0	0	0	0	0	4	19.8	18.0	19.5	22.0	1.7
09JUL-11JUL	0	0	0	0	0	0	59	26.6	14.0	27.0	49.0	7.2
23JUL-26JUL	1	1	0	0	0	0	57	36.6	18.0	35.0	76.0	11.4
06AUG-09AUG	0	1	1	0	0	0	54	47.6	18.0	52.0	80.0	14.3
20AUG-23AUG	0	0	0	1	0	0	58	50.6	32.0	49.0	86.0	10.7
03SEP-06SEP	7	5	3	0	0	0	34	65.9	39.0	68.0	84.0	10.7
17SEP-20SEP	4	6	2	0	0	0	34	66.9	48.0	68.0	84.0	9.8
02OCT-04OCT	3	2	4	6	1	0	28	72.3	47.0	73.5	91.0	12.9
14OCT-17OCT	18	6	4	5	0	0	51	71.0	45.0	71.0	88.0	9.6
	33	21	14	12	1	0	379					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-7 Length Frequency Distribution of Larval and Young-of-Year Atlantic Tomcod in Hudson River Estuary Determined from Long River Survey, 2013

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9
13MAR-15MAR	0	0	0	39	28	1	0	0	0	0	0	0	0	0	0	0	0	0	0
20MAR-22MAR	0	0	0	34	136	17	1	0	0	0	0	0	0	0	0	0	0	0	0
26MAR-28MAR	0	0	0	6	85	49	5	0	0	0	0	0	0	0	0	0	0	0	0
02APR-05APR	0	0	0	1	36	100	33	1	0	0	0	0	0	0	0	0	0	0	0
09APR-12APR	0	0	0	0	0	35	83	42	14	2	0	0	0	0	0	0	0	0	0
16APR-19APR	0	0	0	2	0	6	14	61	64	36	15	0	0	0	0	0	0	0	0
23APR-26APR	0	0	0	0	0	1	0	3	10	25	134	71	1	0	0	0	0	0	0
30APR-03MAY	0	0	0	0	0	0	0	0	1	7	49	150	76	7	0	0	0	0	0
07MAY-10MAY	0	0	0	0	0	0	0	0	0	0	1	19	98	113	53	7	0	0	0
15MAY-17MAY	0	0	0	0	0	0	0	0	0	0	2	4	25	95	100	78	17	0	0
21MAY-24MAY	0	0	0	0	0	0	0	0	0	0	1	0	2	10	31	66	98	69	12
28MAY-31MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	15	20	24	24
04JUN-07JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	6
11JUN-15JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
18JUN-22JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25JUN-28JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09JUL-11JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUL-27JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06AUG-09AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20AUG-23AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	82	285	209	136	107	89	70	202	244	202	226	187	167	137	96	42

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9+	N	MEAN	MIN	MED	MAX	SD
13MAR-15MAR	0	0	0	0	0	0	0	0	0	0	0	0	68	7.9	6.8	7.8	10.1	0.6
20MAR-22MAR	0	0	0	0	0	0	0	0	0	0	0	0	188	8.7	6.8	8.6	12.8	1.0
26MAR-28MAR	0	0	0	0	0	0	0	0	0	0	0	0	145	9.6	6.4	9.5	12.4	1.2
02APR-05APR	0	0	0	0	0	0	0	0	0	0	0	0	171	10.9	7.5	10.9	14.0	1.3
09APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	176	13.3	10.2	13.0	18.4	1.6
16APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	198	16.4	7.1	16.4	22.3	2.4
23APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	245	23.2	11.3	23.2	31.0	3.4
30APR-03MAY	0	0	0	0	0	0	0	0	0	0	0	0	290	27.6	16.2	27.7	36.0	3.5
07MAY-10MAY	0	0	0	0	0	0	0	0	0	0	0	0	291	35.6	21.0	35.0	46.0	4.4
15MAY-17MAY	0	0	0	0	0	0	0	0	0	0	0	0	321	41.1	23.5	41.0	54.0	5.5
21MAY-24MAY	7	1	0	0	0	0	0	0	0	0	0	0	304	51.4	20.6	52.0	71.0	6.6
28MAY-31MAY	27	9	2	0	0	0	0	0	0	0	0	0	135	59.2	38.0	60.0	77.0	7.9
04JUN-07JUN	22	31	13	10	0	0	0	0	0	0	0	0	88	70.7	45.0	71.0	84.0	7.0
11JUN-15JUN	3	12	19	20	20	10	4	0	0	0	0	0	89	81.3	54.0	82.0	96.0	7.8
18JUN-22JUN	1	0	6	11	29	34	27	13	1	0	0	0	122	91.1	69.0	91.0	109.0	6.7
25JUN-28JUN	0	0	1	3	8	5	5	7	7	1	0	0	37	95.5	79.0	95.0	112.0	8.8
09JUL-11JUL	0	0	0	1	2	4	9	3	3	1	1	0	24	98.0	84.0	97.0	118.0	8.1
24JUL-27JUL	0	0	0	0	1	0	0	0	0	2	0	0	3	102.3	85.0	111.0	111.0	15.0
06AUG-09AUG	0	0	0	0	1	1	8	5	4	3	2	0	24	102.5	88.0	102.0	115.0	6.9
20AUG-23AUG	0	0	0	0	0	1	1	2	3	2	2	0	11	106.5	94.0	106.0	119.0	7.8
04SEP-06SEP	0	0	0	0	0	1	3	2	1	1	1	0	9	102.1	94.0	101.0	116.0	7.9
17SEP-20SEP	0	0	0	0	0	0	1	1	1	2	0	0	5	105.4	96.0	107.0	112.0	6.5
01OCT-04OCT	0	0	0	0	0	0	0	2	0	0	0	0	2	100.0	100.0	100.0	100.0	0.0
	60	53	41	45	61	56	58	35	20	12	6	0	2946					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-8 Length Frequency Distribution of Young-of-Year Atlantic Tomcod in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	0	0	0	0	0	0	0	0	0	0	0
30JUL-02AUG	0	0	0	0	0	0	0	0	0	0	0	1
13AUG-17AUG	0	0	0	0	0	0	0	0	0	0	0	0
27AUG-31AUG	0	0	0	0	0	0	0	0	0	0	0	0
10SEP-13SEP	0	0	0	0	0	0	0	0	0	0	0	0
24SEP-27SEP	0	0	0	0	0	0	0	0	0	0	0	0
07OCT-10OCT	0	0	0	0	0	0	0	0	0	0	0	0
21OCT-24OCT	0	0	0	0	0	0	0	0	0	0	0	0
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	0	0
18NOV-21NOV	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1

DATES	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9
30JUN-04JUL	0	3	6	9	26	29	28	14	5	1	0	0
16JUL-20JUL	0	0	0	3	7	11	8	8	2	3	0	0
30JUL-02AUG	0	0	0	4	5	15	9	9	7	2	2	1
13AUG-17AUG	0	0	0	2	6	33	29	17	4	7	3	1
27AUG-31AUG	0	0	2	3	12	13	15	10	7	0	0	0
10SEP-13SEP	0	0	0	0	6	12	16	16	11	2	1	1
24SEP-27SEP	0	0	0	0	2	5	12	6	10	8	1	2
07OCT-10OCT	0	0	0	0	0	1	1	6	7	15	12	5
21OCT-24OCT	0	0	0	0	0	0	0	0	0	1	1	1
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	1	3
18NOV-21NOV	0	0	0	0	0	0	0	0	0	0	0	1
	0	3	8	21	64	119	118	86	53	39	21	15

DATES	130.0-134.9	135.0-139.9	140.0-144.9	145.0-149.9	150.0-154.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	121	97.0	79.0	97.0	116.0	8.0
16JUL-20JUL	0	0	0	0	0	42	100.5	88.0	100.0	119.0	8.0
30JUL-02AUG	0	0	0	0	0	55	101.8	66.0	100.0	125.0	10.3
13AUG-17AUG	0	0	0	0	0	102	102.4	87.0	101.0	126.0	7.7
27AUG-31AUG	0	0	0	0	0	62	99.6	83.0	100.0	114.0	7.5
10SEP-13SEP	1	0	0	0	0	66	104.5	90.0	104.0	130.0	7.8
24SEP-27SEP	1	0	0	0	0	47	108.6	93.0	108.0	132.0	8.7
07OCT-10OCT	3	3	0	0	0	53	118.7	97.0	119.0	138.0	8.3
21OCT-24OCT	0	1	0	0	0	4	125.5	117.0	124.5	136.0	7.9
04NOV-08NOV	5	7	1	1	1	19	135.1	122.0	135.0	150.0	7.0
18NOV-21NOV	1	0	4	2	0	8	140.3	127.0	141.0	149.0	8.0
	11	11	5	3	1	579					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-9 Length Frequency Distribution of Young-of-Year Atlantic Tomcod in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9
10JUN-13JUN	0	0	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	0	0	0	0	0	0	0	0	0	0
09JUL-11JUL	0	0	0	0	0	0	0	0	0	0	0
23JUL-26JUL	0	0	0	0	0	0	0	0	0	0	0
06AUG-09AUG	0	0	0	0	0	0	0	0	0	0	0
20AUG-23AUG	0	0	0	0	0	0	0	0	0	0	0
03SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0
02OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0
14OCT-17OCT	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	0	.	.	.	.	.
24JUN-26JUN	0	0	0	0	0	.	.	.	.	.
09JUL-11JUL	0	0	0	0	0	.	.	.	.	.
23JUL-26JUL	0	0	0	0	0	.	.	.	.	.
06AUG-09AUG	0	0	0	0	0	.	.	.	.	.
20AUG-23AUG	0	0	0	0	0	.	.	.	.	.
03SEP-06SEP	0	0	0	0	0	.	.	.	.	.
17SEP-20SEP	0	0	0	0	0	.	.	.	.	.
02OCT-04OCT	0	0	0	0	0	.	.	.	.	.
14OCT-17OCT	0	0	0	0	0	.	.	.	.	.
	0	0	0	0	0					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-10 Length Frequency Distribution of Larval and Young-of-Year Bay Anchovy in Hudson River Estuary Determined from Long River Survey, 2013

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9
13MAR-15MAR	0	0	0	0	0	0	0	0	0	0	0	3	4	10
20MAR-22MAR	0	0	0	0	0	0	0	0	0	0	0	0	1	1
26MAR-28MAR	0	0	0	0	0	0	0	0	0	0	0	0	1	1
02APR-05APR	0	0	0	0	0	0	0	0	0	0	0	0	5	6
09APR-12APR	0	0	0	0	0	0	0	0	0	0	0	1	0	2
16APR-19APR	0	0	0	0	1	0	0	0	0	0	0	2	8	5
23APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	2	0
30APR-03MAY	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07MAY-10MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15MAY-17MAY	0	0	0	0	0	0	0	0	0	0	0	0	1	1
21MAY-24MAY	0	0	1	0	0	0	0	0	0	0	0	0	0	2
28MAY-31MAY	0	0	4	0	0	0	0	0	0	0	0	0	0	0
04JUN-07JUN	0	103	4	0	0	0	0	0	0	0	0	0	0	0
11JUN-15JUN	0	5	2	0	0	0	0	0	0	0	0	0	0	0
18JUN-22JUN	0	1	5	8	0	1	0	0	0	0	0	0	0	0
25JUN-28JUN	1	148	70	35	13	1	1	0	0	0	0	0	0	0
09JUL-11JUL	0	23	68	130	112	96	41	23	7	1	2	0	0	0
24JUL-27JUL	0	29	145	217	195	157	169	203	176	117	105	15	1	0
06AUG-09AUG	0	6	21	135	331	341	176	122	110	129	297	109	30	5
20AUG-23AUG	0	1	13	63	133	164	194	256	290	183	411	263	111	75
04SEP-06SEP	0	0	0	10	55	113	115	132	140	103	372	246	193	215
17SEP-20SEP	0	0	1	7	11	15	27	39	84	130	382	271	252	230
01OCT-04OCT	0	0	0	0	2	5	12	42	36	28	134	69	108	139
	1	316	334	605	853	893	735	817	843	691	1703	980	717	693

DATES	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9+	N	MEAN	MIN	MED	MAX	SD
13MAR-15MAR	5	2	0	0	0	0	0	0	24	36.8	28.0	37.0	46.0	4.7
20MAR-22MAR	0	0	0	0	0	0	0	0	2	33.0	30.0	33.0	36.0	4.2
26MAR-28MAR	1	0	0	0	0	0	0	0	3	36.3	30.0	37.0	42.0	6.0
02APR-05APR	1	1	0	0	0	0	0	0	13	36.8	32.0	37.0	45.0	4.1
09APR-12APR	0	1	0	0	0	0	0	0	4	36.0	28.0	35.5	45.0	7.0
16APR-19APR	1	0	0	0	0	0	0	0	17	32.7	9.1	33.0	40.0	6.9
23APR-26APR	0	0	0	0	0	0	0	0	2	32.5	31.0	32.5	34.0	2.1
30APR-03MAY	1	0	0	0	0	0	0	0	3	35.4	29.2	36.0	41.0	5.9
07MAY-10MAY	0	0	0	0	0	0	0	0	0	.	.	.	.	.
15MAY-17MAY	2	0	0	0	1	0	0	0	5	42.6	31.0	41.0	61.0	11.1
21MAY-24MAY	0	2	1	2	1	1	2	2	14	54.6	5.0	57.5	75.0	19.4
28MAY-31MAY	0	0	0	0	0	0	0	0	4	4.8	4.5	4.8	5.3	0.4
04JUN-07JUN	0	0	0	0	0	0	0	0	107	3.1	2.1	3.1	4.1	0.5
11JUN-15JUN	0	0	0	0	0	0	0	0	7	3.7	3.1	3.7	4.2	0.4
18JUN-22JUN	0	0	0	0	0	0	0	0	15	5.9	2.4	6.1	10.1	1.7
25JUN-28JUN	0	0	0	0	0	0	0	0	269	4.4	1.9	3.8	12.9	1.8
09JUL-11JUL	0	0	0	0	0	0	0	0	503	8.8	2.6	8.4	20.7	3.1
24JUL-27JUL	0	0	0	0	0	0	0	0	1529	12.4	2.0	12.3	30.0	5.3
06AUG-09AUG	1	0	0	0	0	0	0	0	1813	14.8	2.5	12.5	40.0	6.4
20AUG-23AUG	6	0	1	0	0	0	0	0	2164	19.0	3.9	17.7	50.0	7.3
04SEP-06SEP	49	13	2	0	0	0	0	0	1758	23.6	6.8	23.0	51.0	9.1
17SEP-20SEP	238	90	13	1	0	2	0	0	1794	29.4	5.9	28.0	67.0	9.6
01OCT-04OCT	85	65	30	10	4	1	0	0	772	32.0	8.2	33.0	65.0	11.2
	390	174	47	13	6	4	2	2	10822					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-11 Length Frequency Distribution of Young-of-Year Bay Anchovy in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	1	0	0	0	0	0	0	0	0
30JUL-02AUG	0	0	31	42	7	0	0	0	0	0
13AUG-17AUG	0	3	40	68	43	29	2	1	2	0
27AUG-31AUG	0	7	29	43	61	37	6	1	0	0
10SEP-13SEP	0	0	25	44	31	32	39	11	5	3
24SEP-27SEP	0	0	9	17	44	41	42	20	7	3
07OCT-10OCT	0	0	0	7	26	35	39	55	22	10
21OCT-24OCT	0	0	0	7	11	17	28	17	22	10
04NOV-08NOV	0	0	0	1	5	21	14	20	11	9
18NOV-21NOV	0	0	0	2	4	14	15	8	5	3
	0	11	134	231	232	226	185	133	74	38

DATES	60.0-64.9	65.0-69.9	70.0-74.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	.	.	.	.	.
16JUL-20JUL	0	0	0	1	15.0	15.0	15.0	15.0	.
30JUL-02AUG	0	0	0	80	25.2	20.0	25.0	34.0	2.9
13AUG-17AUG	0	0	0	188	28.8	18.0	28.0	54.0	5.8
27AUG-31AUG	0	0	0	184	29.8	18.0	30.0	46.0	5.8
10SEP-13SEP	1	2	0	194	34.7	21.0	34.0	66.0	9.5
24SEP-27SEP	0	0	0	183	37.1	20.0	37.0	57.0	7.5
07OCT-10OCT	2	0	0	196	42.6	27.0	43.0	63.0	7.6
21OCT-24OCT	5	1	0	120	44.4	25.0	44.0	65.0	9.3
04NOV-08NOV	4	0	0	85	45.0	28.0	45.0	63.0	8.1
18NOV-21NOV	1	0	0	53	42.3	27.0	41.0	62.0	7.8
	13	3	0	1284					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-12 Length Frequency Distribution of Young-of-Year Bay Anchovy in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9
10JUN-13JUN	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	1	5	0	0	0	0	0	0
09JUL-11JUL	0	0	0	0	0	0	0	0	0
23JUL-26JUL	0	0	22	34	1	1	0	0	0
06AUG-09AUG	1	9	73	25	21	3	0	0	0
20AUG-23AUG	0	2	31	45	36	35	9	3	0
03SEP-06SEP	0	0	17	17	12	21	8	6	1
17SEP-20SEP	0	0	19	37	5	16	24	22	12
02OCT-04OCT	0	0	9	38	18	12	2	7	5
14OCT-17OCT	0	0	0	7	23	20	23	18	7
	1	12	176	203	116	108	66	56	25

DATES	55.0-59.9	60.0-64.9	65.0-69.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	.	.	.	.	.
24JUN-26JUN	0	0	0	6	20.5	19.0	20.5	22.0	1.0
09JUL-11JUL	0	0	0	0	.	.	.	.	.
23JUL-26JUL	0	0	0	58	25.3	20.0	25.0	36.0	2.5
06AUG-09AUG	0	0	0	132	24.1	14.0	23.0	38.0	4.5
20AUG-23AUG	0	0	0	161	30.3	18.0	30.0	47.0	6.1
03SEP-06SEP	1	0	0	83	32.5	20.0	34.0	58.0	8.3
17SEP-20SEP	2	3	0	141	36.7	21.0	37.0	64.0	11.0
02OCT-04OCT	1	0	0	92	32.2	21.0	29.0	55.0	8.2
14OCT-17OCT	1	0	0	99	39.2	25.0	39.0	55.0	7.0
	5	3	0	772					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-13 Length Frequency Distribution of Larval and Young-of-Year American Shad in Hudson River Estuary Determined from Long River Survey, 2013

DATES	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9
13MAR-15MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20MAR-22MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26MAR-28MAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02APR-05APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09APR-12APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16APR-19APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23APR-26APR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30APR-03MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07MAY-10MAY	0	0	0	1	4	1	0	0	0	0	0	0	0	0	0
15MAY-17MAY	0	0	0	0	7	17	19	8	1	0	0	0	0	0	0
21MAY-24MAY	0	0	0	0	6	12	8	21	27	0	0	0	0	0	0
28MAY-31MAY	0	0	0	0	4	1	0	2	9	20	14	0	0	0	0
04JUN-07JUN	0	0	0	0	0	0	0	1	1	5	18	0	0	0	0
11JUN-15JUN	0	0	0	0	5	10	3	0	1	1	1	1	0	0	0
18JUN-22JUN	0	0	0	0	0	2	0	0	1	1	5	25	29	3	0
25JUN-28JUN	0	0	0	0	0	0	0	2	1	2	4	11	17	37	0
09JUL-11JUL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
24JUL-27JUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06AUG-09AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20AUG-23AUG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	26	43	30	34	41	29	43	37	46	40	0

DATES	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
13MAR-15MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
20MAR-22MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
26MAR-28MAR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
02APR-05APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
09APR-12APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
16APR-19APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
23APR-26APR	0	0	0	0	0	0	0	0	0	.	.	.	.	.
30APR-03MAY	0	0	0	0	0	0	0	0	0	.	.	.	.	.
07MAY-10MAY	0	0	0	0	0	0	0	0	6	9.2	7.6	9.5	10.1	1.0
15MAY-17MAY	0	0	0	0	0	0	0	0	52	12.0	9.2	12.1	16.0	1.7
21MAY-24MAY	0	0	0	0	0	0	0	0	74	14.4	8.6	15.2	17.8	2.7
28MAY-31MAY	0	0	0	0	0	0	0	0	50	17.9	8.6	18.8	21.8	3.3
04JUN-07JUN	0	0	0	0	0	0	0	0	25	20.8	15.9	21.5	24.0	1.9
11JUN-15JUN	0	0	0	0	0	0	0	0	22	12.4	8.2	10.9	26.3	4.4
18JUN-22JUN	0	0	0	0	0	0	0	0	66	28.9	10.2	29.7	38.0	4.9
25JUN-28JUN	0	0	0	0	0	0	0	0	74	32.1	15.1	34.5	39.0	6.0
09JUL-11JUL	1	1	1	0	0	0	0	0	4	45.1	22.3	50.5	57.0	15.5
24JUL-27JUL	0	0	1	0	1	1	0	0	3	65.3	59.0	65.0	72.0	6.5
06AUG-09AUG	0	0	0	0	0	2	1	0	3	73.3	71.0	73.0	76.0	2.5
20AUG-23AUG	0	0	0	0	0	0	0	0	0	.	.	.	.	.
04SEP-06SEP	0	0	0	0	0	0	0	0	0	.	.	.	.	.
17SEP-20SEP	0	0	0	0	0	0	0	0	0	.	.	.	.	.
01OCT-04OCT	0	0	0	0	0	0	0	0	0	.	.	.	.	.
	1	1	2	0	1	3	1	0	379					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-14 Length Frequency Distribution of Young-of-Year American Shad in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9
30JUN-04JUL	0	1	0	1	7	12	7	0	1	0	0	0
16JUL-20JUL	0	0	0	0	0	0	0	3	3	2	0	0
30JUL-02AUG	0	0	0	0	0	0	0	0	1	2	1	5
13AUG-17AUG	0	0	0	0	0	0	0	0	0	0	0	1
27AUG-31AUG	0	0	0	0	0	0	0	0	0	0	0	0
10SEP-13SEP	0	0	0	0	0	0	0	0	0	0	0	0
24SEP-27SEP	0	0	0	0	0	0	0	0	0	0	0	0
07OCT-10OCT	0	0	0	0	0	0	0	0	0	0	0	0
21OCT-24OCT	0	0	0	0	0	0	0	0	0	0	0	0
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	0	0
18NOV-21NOV	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	1	7	12	7	3	5	4	1	6

DATES	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	0	0	0	0	0	0	0	0	0	0	0
30JUL-02AUG	1	0	0	0	0	0	0	0	0	0	0	0
13AUG-17AUG	0	1	5	1	0	0	0	0	0	0	0	0
27AUG-31AUG	0	0	0	2	1	0	0	0	0	0	0	0
10SEP-13SEP	0	0	0	0	0	0	0	0	0	0	0	0
24SEP-27SEP	0	0	0	0	0	0	0	0	0	0	0	0
07OCT-10OCT	0	0	0	0	0	0	0	0	0	2	2	0
21OCT-24OCT	0	0	0	0	0	0	0	0	0	0	0	0
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	0	0
18NOV-21NOV	0	0	0	0	0	0	0	0	0	0	0	2
	1	1	5	3	1	0	0	0	0	2	2	2

DATES	130.0-134.9	135.0-139.9	140.0-144.9	145.0-149.9	150.0-154.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	29	36.4	19.0	36.0	52.0	6.0
16JUL-20JUL	0	0	0	0	0	8	51.8	45.0	52.5	58.0	4.9
30JUL-02AUG	0	0	0	0	0	10	63.3	53.0	66.0	71.0	5.6
13AUG-17AUG	0	0	0	0	0	9	77.1	60.0	80.0	85.0	8.6
27AUG-31AUG	0	0	0	0	0	3	88.3	87.0	88.0	90.0	1.5
10SEP-13SEP	0	0	0	0	0	0	.	.	.	.	.
24SEP-27SEP	0	0	0	0	0	0	.	.	.	.	.
07OCT-10OCT	0	1	0	0	0	5	122.8	117.0	121.0	136.0	7.7
21OCT-24OCT	0	0	0	0	0	0	.	.	.	.	.
04NOV-08NOV	0	0	0	0	0	0	.	.	.	.	.
18NOV-21NOV	0	0	0	1	0	3	133.3	127.0	127.0	146.0	11.0
	0	1	0	1	0	67					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-15 Length Frequency Distribution of Young-of-Year American Shad in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9
10JUN-13JUN	0	1	29	44	6	0	0	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	0	0	2	21	38	9	0	0	0	0	0	0	0	0	0
09JUL-11JUL	0	0	0	0	1	2	6	6	21	5	2	1	0	0	0	0
23JUL-26JUL	0	0	0	0	0	0	1	6	5	9	11	18	7	3	0	1
06AUG-09AUG	0	0	0	0	0	0	0	3	0	2	1	9	22	9	5	2
20AUG-23AUG	0	0	0	0	0	0	0	0	0	0	0	0	4	7	8	5
03SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0	0	1	0	11	14
17SEP-20SEP	0	0	0	0	0	0	0	1	0	0	1	0	1	0	2	4
02OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
14OCT-17OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	29	46	28	40	16	16	26	16	15	28	35	19	27	26

DATES	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9	130.0-134.9	135.0-139.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	0	0	0	0	0	0	80	25.1	19.0	25.0	31.0	2.7
24JUN-26JUN	0	0	0	0	0	0	0	0	0	0	70	35.6	25.0	36.0	42.0	3.5
09JUL-11JUL	0	0	0	0	0	0	0	0	0	0	45	50.4	31.0	51.0	65.0	7.0
23JUL-26JUL	0	0	0	0	0	0	0	0	0	0	66	62.1	43.0	63.5	85.0	8.5
06AUG-09AUG	0	0	0	0	0	0	0	0	0	0	53	71.3	46.0	72.0	87.0	8.5
20AUG-23AUG	2	0	1	0	0	0	0	0	0	0	28	80.9	60.0	80.5	100.0	7.6
03SEP-06SEP	13	6	5	0	0	0	0	0	0	0	50	89.3	74.0	89.0	102.0	6.4
17SEP-20SEP	14	21	10	4	0	0	0	0	0	0	58	94.2	48.0	95.0	109.0	10.1
02OCT-04OCT	0	2	4	6	5	0	0	0	0	0	18	104.8	84.0	106.5	114.0	7.2
14OCT-17OCT	0	0	0	8	7	5	4	6	1	0	31	116.2	105.0	115.0	130.0	7.6
	29	29	20	18	12	5	4	6	1	0	499					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-16 Length Frequency Distribution of Young-of-Year Alewife in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9
30JUN-04JUL	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	0	0	0	0	0	10	19	12	10	1	0	0	0	0	0	0
30JUL-02AUG	0	0	0	0	0	1	0	3	10	12	7	5	0	0	0	0	0
13AUG-17AUG	0	0	0	0	0	0	0	1	0	6	3	1	2	7	4	0	0
27AUG-31AUG	0	0	0	0	0	0	0	0	0	0	1	2	1	2	1	3	1
10SEP-13SEP	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	0	3
24SEP-27SEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
07OCT-10OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
21OCT-24OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
18NOV-21NOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	0	0	0	0	0	1	17	23	22	28	12	9	5	11	11	5	14

DATES	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9	130.0-134.9	135.0-139.9	140.0-144.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0	7	42.1	41.0	42.0	44.0	1.1
16JUL-20JUL	0	0	0	0	0	0	0	0	0	0	52	49.3	41.0	48.5	62.0	5.2
30JUL-02AUG	0	1	0	0	0	0	0	0	0	0	40	57.7	36.0	56.0	102.0	10.0
13AUG-17AUG	0	0	1	1	0	0	0	0	0	0	29	70.6	47.0	71.0	111.0	14.8
27AUG-31AUG	0	0	0	0	0	0	0	0	0	0	11	78.4	64.0	77.0	92.0	9.3
10SEP-13SEP	3	1	0	0	0	0	0	0	0	0	13	85.8	67.0	90.0	104.0	11.6
24SEP-27SEP	3	2	2	0	0	0	0	0	0	0	13	93.6	80.0	95.0	106.0	9.0
07OCT-10OCT	1	6	3	0	1	1	0	0	0	0	15	100.6	81.0	102.0	120.0	10.8
21OCT-24OCT	1	0	3	2	0	0	0	0	1	0	11	104.3	87.0	108.0	139.0	14.8
04NOV-08NOV	1	1	2	9	0	1	0	0	0	0	15	108.7	90.0	110.0	120.0	7.1
18NOV-21NOV	0	3	2	4	3	1	0	0	0	0	16	106.6	90.0	109.0	120.0	8.9
	9	14	13	16	4	3	0	0	1	0	222					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-17 Length Frequency Distribution of Young-of-Year Alewife in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9	75.0-79.9
10JUN-13JUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	0	0	0	0	0	6	4	0	0	0	0	0	0
09JUL-11JUL	0	0	0	0	0	0	43	27	14	0	1	0	0	0
23JUL-26JUL	0	0	0	0	0	0	2	9	24	33	19	7	0	0
06AUG-09AUG	0	0	0	0	0	0	0	0	1	16	15	11	2	1
20AUG-23AUG	0	0	0	0	0	0	0	0	0	1	5	8	7	3
03SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0	0	3	6
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0	0	2	6
02OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14OCT-17OCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	51	40	39	50	40	26	14	16

DATES	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	0	0	0	0	.	.	.	.	.
24JUN-26JUN	0	0	0	0	0	0	0	10	43.6	41.0	42.5	48.0	2.8
09JUL-11JUL	0	0	0	0	0	0	0	85	45.5	41.0	44.0	62.0	4.0
23JUL-26JUL	0	0	0	1	0	0	0	103	56.8	42.0	56.0	97.0	6.7
06AUG-09AUG	0	0	0	0	0	0	0	46	62.0	54.0	62.0	75.0	5.1
20AUG-23AUG	1	3	0	0	0	0	0	30	69.6	57.0	68.5	88.0	7.8
03SEP-06SEP	6	2	1	0	0	0	0	18	79.2	71.0	79.5	93.0	5.5
17SEP-20SEP	8	5	3	1	0	1	0	26	83.4	73.0	81.5	109.0	8.0
02OCT-04OCT	1	2	1	0	0	0	0	4	88.0	83.0	88.5	92.0	3.7
14OCT-17OCT	0	0	0	0	0	0	0	0	.	.	.	.	.
	16	12	5	2	0	1	0	322					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-18 Length Frequency Distribution of Young-of-Year Blueback Herring in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	0	0	0	0	1	16	5	1	0	0	0	0
30JUL-02AUG	0	0	0	0	0	0	1	4	12	7	0	0	0
13AUG-17AUG	0	0	0	0	0	0	0	4	1	1	1	5	6
27AUG-31AUG	0	0	0	0	0	0	0	1	0	1	1	0	1
10SEP-13SEP	0	0	0	0	0	0	0	0	0	1	0	1	0
24SEP-27SEP	0	0	0	0	0	0	0	0	0	0	0	0	0
07OCT-10OCT	0	0	0	0	0	0	0	0	0	0	0	0	1
21OCT-24OCT	0	0	0	0	0	0	0	0	0	0	0	0	0
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	0	0	0
18NOV-21NOV	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	17	14	14	10	2	6	8

DATES	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	0	0	0	.	.	.	.	.
16JUL-20JUL	0	0	0	0	0	0	0	23	43.0	38.0	43.0	50.0	2.5
30JUL-02AUG	0	0	0	0	0	0	0	24	52.0	43.0	53.0	57.0	3.8
13AUG-17AUG	1	0	0	0	0	0	0	20	62.8	45.0	67.0	76.0	10.6
27AUG-31AUG	0	2	1	0	0	0	0	7	70.7	49.0	73.0	86.0	14.4
10SEP-13SEP	1	0	2	0	0	0	0	5	74.2	58.0	77.0	85.0	11.9
24SEP-27SEP	0	2	1	3	0	0	0	6	88.5	82.0	88.5	94.0	5.4
07OCT-10OCT	1	0	2	3	3	2	0	12	90.9	73.0	92.0	102.0	9.0
21OCT-24OCT	0	0	0	0	0	0	0	0	.	.	.	.	.
04NOV-08NOV	0	0	0	0	0	0	0	0	.	.	.	.	.
18NOV-21NOV	0	0	0	0	0	0	0	0	.	.	.	.	.
	3	4	6	6	3	2	0	97					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-19 Length Frequency Distribution of Young-of-Year Blueback Herring in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
10JUN-13JUN	0	0	0	0	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	0	0	0	0	0	0	0	0	0	0	0	0
09JUL-11JUL	0	0	0	0	0	0	14	2	1	0	0	0	0
23JUL-26JUL	0	0	0	0	0	0	10	26	11	1	0	0	0
06AUG-09AUG	0	0	0	0	0	0	0	0	4	7	2	1	0
20AUG-23AUG	0	0	0	0	0	0	1	0	0	1	1	0	4
03SEP-06SEP	0	0	0	0	0	0	0	0	0	0	1	1	3
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0	1	6
02OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0	0	0
14OCT-17OCT	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	25	28	16	9	4	3	13

DATES	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	0	0	0	.	.	.	.	.
24JUN-26JUN	0	0	0	0	0	0	0	.	.	.	.	.
09JUL-11JUL	0	0	0	0	0	0	17	42.8	41.0	42.0	50.0	2.7
23JUL-26JUL	0	0	0	0	0	0	48	47.6	41.0	48.0	55.0	3.2
06AUG-09AUG	0	0	0	0	0	0	16	57.3	52.0	55.5	68.0	4.4
20AUG-23AUG	6	1	0	0	0	0	14	70.2	41.0	74.5	80.0	10.4
03SEP-06SEP	0	2	3	0	0	0	11	75.6	60.0	72.0	88.0	10.7
17SEP-20SEP	14	14	7	1	1	0	44	79.8	68.0	80.0	95.0	5.7
02OCT-04OCT	0	6	2	0	0	0	8	82.8	80.0	82.0	87.0	2.4
14OCT-17OCT	1	0	1	2	3	1	8	92.5	76.0	95.0	100.0	8.2
	21	23	13	3	4	1	166					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-20 Length Frequency Distribution of Young-of-Year Spottail Shiner in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	0	1	1	2	1	1	0	0	0	0
30JUL-02AUG	0	0	0	0	0	0	0	0	1	0	0
13AUG-17AUG	0	0	0	0	0	1	2	3	0	1	0
27AUG-31AUG	0	0	0	0	0	0	0	1	0	0	0
10SEP-13SEP	0	0	0	0	0	0	0	2	0	1	3
24SEP-27SEP	0	0	0	0	0	0	0	0	0	0	0
07OCT-10OCT	0	0	0	0	0	0	0	0	0	0	0
21OCT-24OCT	0	0	0	0	0	0	0	0	0	0	0
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	0
18NOV-21NOV	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	1	2	2	3	6	1	2	3

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9	85.0-89.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	0	.	.	.	.	.
16JUL-20JUL	0	0	0	0	0	6	32.0	23.0	34.0	41.0	6.8
30JUL-02AUG	0	0	0	0	0	1	50.0	50.0	50.0	50.0	.
13AUG-17AUG	0	0	0	0	0	7	45.9	39.0	46.0	59.0	6.6
27AUG-31AUG	1	0	0	0	0	2	57.0	47.0	57.0	67.0	14.1
10SEP-13SEP	1	0	0	0	0	7	57.1	45.0	61.0	66.0	8.3
24SEP-27SEP	0	0	0	0	0	1	60.0	60.0	60.0	60.0	.
07OCT-10OCT	0	2	1	0	0	3	73.0	71.0	73.0	75.0	2.0
21OCT-24OCT	0	0	0	0	0	0	.	.	.	.	.
04NOV-08NOV	0	0	0	0	0	0	.	.	.	.	.
18NOV-21NOV	0	0	1	0	0	1	76.0	76.0	76.0	76.0	.
	2	2	2	0	0	28					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-21 Length Frequency Distribution of Young-of-Year Spottail Shiner in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9
10JUN-13JUN	3	7	0	3	0	0	0	0	0	0	0
24JUN-26JUN	0	26	15	3	0	0	0	0	0	0	0
09JUL-11JUL	0	2	11	22	14	2	0	0	0	0	0
23JUL-26JUL	0	0	3	6	13	16	16	7	1	0	0
06AUG-09AUG	0	0	0	0	1	5	10	12	7	1	0
20AUG-23AUG	0	0	0	0	1	1	4	6	18	11	7
03SEP-06SEP	0	0	0	0	0	0	1	0	2	5	7
17SEP-20SEP	0	0	0	0	0	0	1	2	7	15	15
02OCT-04OCT	0	0	0	0	0	0	0	0	1	0	0
14OCT-17OCT	0	0	0	0	0	0	0	0	0	5	11
	3	35	29	34	29	24	32	27	36	37	40

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	13	17.5	14.0	15.0	26.0	4.6
24JUN-26JUN	0	0	0	0	44	19.0	15.0	18.5	25.0	2.5
09JUL-11JUL	0	0	0	0	51	26.8	18.0	27.0	35.0	4.1
23JUL-26JUL	0	0	0	0	62	36.7	20.0	37.0	50.0	6.9
06AUG-09AUG	0	0	0	0	36	45.0	34.0	45.0	57.0	5.5
20AUG-23AUG	0	0	0	0	57	53.3	30.0	53.0	64.0	7.0
03SEP-06SEP	1	0	0	0	18	58.3	43.0	60.0	67.0	5.4
17SEP-20SEP	12	7	0	0	59	60.8	43.0	62.0	74.0	6.7
02OCT-04OCT	4	1	1	0	7	68.0	54.0	69.0	77.0	7.2
14OCT-17OCT	13	4	9	2	48	67.2	55.0	65.5	80.0	6.8
	30	12	10	2	395					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-22 Length Frequency Distribution of Young-of-Year White Catfish in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
30JUN-04JUL	0	2	0	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	2	8	0	0	0	0	0	0	0	0	0	0
30JUL-02AUG	0	0	1	0	3	0	0	0	0	0	0	0	0
13AUG-17AUG	0	0	0	2	3	7	4	4	7	2	0	0	0
27AUG-31AUG	0	0	0	0	0	1	2	3	5	2	1	1	1
10SEP-13SEP	0	0	0	0	0	0	0	0	3	3	1	4	1
24SEP-27SEP	0	0	0	0	0	0	0	0	0	6	7	6	5
07OCT-10OCT	0	0	0	0	0	0	0	0	0	1	1	3	6
21OCT-24OCT	0	0	0	0	0	0	0	0	0	2	3	3	2
04NOV-08NOV	0	0	0	0	0	0	0	0	0	1	1	4	7
18NOV-21NOV	0	0	0	0	0	0	0	0	0	2	0	1	12
	0	4	9	2	6	8	6	7	15	19	14	22	34

DATES	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	0	2	17.5	17.0	17.5	18.0	0.7
16JUL-20JUL	0	0	0	0	0	0	10	21.4	18.0	21.0	24.0	2.0
30JUL-02AUG	0	0	0	0	0	0	4	30.0	23.0	31.5	34.0	5.0
13AUG-17AUG	0	0	0	0	0	0	29	42.4	25.0	42.0	57.0	8.6
27AUG-31AUG	0	0	0	0	0	0	17	52.9	36.0	52.0	74.0	9.3
10SEP-13SEP	4	0	0	0	0	0	18	63.9	50.0	64.0	77.0	8.6
24SEP-27SEP	6	6	2	0	0	0	40	69.4	55.0	67.0	87.0	9.1
07OCT-10OCT	3	4	1	0	0	0	19	73.7	55.0	72.0	89.0	8.3
21OCT-24OCT	2	6	3	0	0	0	21	74.0	59.0	75.0	89.0	10.3
04NOV-08NOV	8	5	2	0	0	0	28	74.8	57.0	75.0	88.0	7.1
18NOV-21NOV	4	3	4	0	0	0	26	75.0	58.0	74.0	89.0	7.7
	27	24	12	0	0	0	214					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-23 Length Frequency Distribution of Young-of-Year White Catfish in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9
10JUN-13JUN	0	0	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	0	0	0	0	0	0	0	0	0	0
09JUL-11JUL	0	0	0	0	0	0	0	0	0	0	0
23JUL-26JUL	0	0	0	0	0	0	0	0	0	0	0
06AUG-09AUG	0	0	0	0	0	0	0	0	0	0	0
20AUG-23AUG	0	0	0	0	0	0	0	0	0	0	0
03SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0
02OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0
14OCT-17OCT	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	0	.	.	.	.	.
24JUN-26JUN	0	0	0	0	0	.	.	.	.	.
09JUL-11JUL	0	0	0	0	0	.	.	.	.	.
23JUL-26JUL	0	0	0	0	0	.	.	.	.	.
06AUG-09AUG	0	0	0	0	0	.	.	.	.	.
20AUG-23AUG	0	0	0	0	0	.	.	.	.	.
03SEP-06SEP	0	0	0	0	0	.	.	.	.	.
17SEP-20SEP	0	0	0	0	0	.	.	.	.	.
02OCT-04OCT	0	0	0	0	0	.	.	.	.	.
14OCT-17OCT	0	0	0	0	0	.	.	.	.	.
	0	0	0	0	0					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-24 Length Frequency Distribution of Young-of-Year Weakfish in Hudson River Estuary Determined from Fall Juvenile Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9	65.0-69.9	70.0-74.9
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUL-02AUG	0	0	0	9	11	15	7	5	3	1	1	0	1
13AUG-17AUG	0	0	3	3	7	5	6	7	17	18	13	13	0
27AUG-31AUG	0	2	1	0	1	1	3	3	6	6	4	4	4
10SEP-13SEP	0	0	1	2	3	4	2	4	4	6	3	3	6
24SEP-27SEP	0	0	0	0	0	1	5	13	10	8	5	4	3
07OCT-10OCT	0	0	0	0	0	0	0	0	2	0	2	6	6
21OCT-24OCT	0	0	0	0	0	0	0	1	0	1	0	0	3
04NOV-08NOV	0	0	0	0	0	0	0	0	0	0	0	0	0
18NOV-21NOV	0	0	0	0	0	0	0	0	1	0	0	0	1
	0	2	5	14	22	26	23	33	43	40	28	30	24

DATES	75.0-79.9	80.0-84.9	85.0-89.9	90.0-94.9	95.0-99.9	100.0-104.9	105.0-109.9	110.0-114.9	115.0-119.9	120.0-124.9	125.0-129.9	130.0-134.9	135.0-139.9
30JUN-04JUL	0	0	0	0	0	0	0	0	0	0	0	0	0
16JUL-20JUL	0	0	0	0	0	0	0	0	0	0	0	0	0
30JUL-02AUG	1	1	0	0	0	0	0	0	0	0	0	0	0
13AUG-17AUG	2	1	2	1	1	0	0	0	0	0	0	0	0
27AUG-31AUG	5	3	8	5	1	2	0	0	0	0	0	0	0
10SEP-13SEP	11	10	14	7	3	4	2	1	0	2	0	0	0
24SEP-27SEP	3	4	4	2	2	0	0	0	2	0	0	0	0
07OCT-10OCT	8	4	5	0	0	0	4	1	0	3	4	1	0
21OCT-24OCT	11	5	7	4	1	3	0	0	2	0	1	1	0
04NOV-08NOV	0	1	1	2	4	3	2	0	0	0	1	0	0
18NOV-21NOV	0	0	5	5	6	4	2	3	0	0	0	1	0
	41	29	46	26	18	16	10	5	4	5	6	3	0

DATES	140.0-144.9	145.0-149.9	150.0-154.9	155.0-159.9	160.0-164.9+	N	MEAN	MIN	MED	MAX	SD
30JUN-04JUL	0	0	0	0	0	0	.	.	.	.	.
16JUL-20JUL	0	0	0	0	0	0	.	.	.	.	.
30JUL-02AUG	0	0	0	0	0	55	39.2	25.0	37.0	82.0	12.2
13AUG-17AUG	0	0	0	0	0	104	53.8	21.0	55.5	96.0	14.6
27AUG-31AUG	0	0	0	0	0	63	66.2	16.0	65.0	103.0	20.2
10SEP-13SEP	0	0	0	0	0	92	73.4	23.0	78.0	123.0	22.2
24SEP-27SEP	0	0	0	0	0	70	62.2	36.0	56.5	116.0	17.8
07OCT-10OCT	0	0	0	0	0	49	84.9	51.0	77.0	130.0	22.6
21OCT-24OCT	1	2	0	2	1	46	94.5	45.0	85.5	162.0	27.1
04NOV-08NOV	0	0	0	0	0	14	99.4	83.0	98.5	129.0	10.8
18NOV-21NOV	0	1	0	0	0	29	97.3	54.0	96.0	145.0	16.4
	1	3	0	2	1	522					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

Table G-25 Length Frequency Distribution of Young-of-Year Weakfish in Hudson River Estuary Determined from Beach Seine Survey, 2013

DATES	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-64.9
10JUN-13JUN	0	0	0	0	0	0	0	0	0	0	0
24JUN-26JUN	0	5	6	0	0	0	0	0	0	0	0
09JUL-11JUL	0	0	0	0	0	0	0	0	0	0	0
23JUL-26JUL	0	0	0	0	0	0	0	0	0	0	0
06AUG-09AUG	0	0	0	0	0	0	0	0	0	0	0
20AUG-23AUG	0	0	0	0	0	0	0	0	0	0	0
03SEP-06SEP	0	0	0	0	0	0	0	0	0	0	0
17SEP-20SEP	0	0	0	0	0	0	0	0	0	0	0
02OCT-04OCT	0	0	0	0	0	0	0	0	0	0	0
14OCT-17OCT	0	0	0	0	0	0	0	0	0	0	0
	0	5	6	0	0	0	0	0	0	0	0

DATES	65.0-69.9	70.0-74.9	75.0-79.9	80.0-84.9+	N	MEAN	MIN	MED	MAX	SD
10JUN-13JUN	0	0	0	0	0	.	.	.	.	.
24JUN-26JUN	0	0	0	0	11	20.1	17.0	20.0	24.0	2.1
09JUL-11JUL	0	0	0	0	0	.	.	.	.	.
23JUL-26JUL	0	0	0	0	0	.	.	.	.	.
06AUG-09AUG	0	0	0	0	0	.	.	.	.	.
20AUG-23AUG	0	0	0	0	0	.	.	.	.	.
03SEP-06SEP	0	0	0	0	0	.	.	.	.	.
17SEP-20SEP	0	0	0	0	0	.	.	.	.	.
02OCT-04OCT	0	0	0	0	0	.	.	.	.	.
14OCT-17OCT	0	0	0	0	0	.	.	.	.	.
	0	0	0	0	11					

NOTE: Lengths are total lengths in mm, N = Number of lengths, MEAN = Mean length, MIN = Minimum length, MED = Median length, MAX = Maximum length, SD = Standard deviation.

CHAPTER 1
INTRODUCTION

Since 1973, an annual Year Class Report has been prepared on behalf of the several electric utility companies (collectively, the "Utilities") operating generating stations in the Hudson River estuary. This report, which is based on the 2013 Hudson River Biological Monitoring Program, has been prepared on behalf of Entergy Nuclear Indian Point 2 L.L.C., Entergy Nuclear Indian Point 3 L.L.C., Entergy Nuclear Operations, Inc. and NRG Bowline L.L.C. The principal reporting objective has been to present and analyze data on the distribution and abundance of early life stages of selected fish species based on field surveys conducted throughout the Hudson River estuary. The content and scope of these reports have varied over time from estimating the environmental impact of five Hudson River generating stations to focusing on indices of year class strength to describing the spatiotemporal distribution of selected fish species. Since the early 1990's, the annual Year Class Report has been standardized to describe the physical/chemical parameter patterns in the Hudson River estuary and the spatiotemporal distribution of 16 selected species of fish. These 16 species were identified by the New York State Department of Environmental Conservation (NYSDEC) of interest for discharge permitting purposes.

This report adds to the historical database by presenting the results of the Longitudinal River Ichthyoplankton Survey, the Fall Juvenile Survey (formerly, the Fall Shoals Survey), and the Beach Seine Survey for 2013. However, the format of this report differs from previous years in that it is primarily a data report, supplying summarizing figures and tables without accompanying text. The 2013 Year Class Report presents basic abundance and distribution data with the following objectives:

- Present the patterns and variability of environmental parameters occurring in the Hudson River estuary in 2013.
- Present the distribution and abundance of 16 selected species of fish (Table 1-1) in the Hudson River estuary in 2013.
- Present patterns in growth for the 2013 year class of key species.

This report is organized into four chapters with supporting appendixes. Data collection and analysis methods are described in Chapter 2. Physical and chemical parameters are presented in Chapter 3 and spatiotemporal distribution of selected fish species are presented in Chapter 4. Detailed data tables supporting report figures are contained within the appendix sections as follows:

- Appendix A – Quality Control Report for the 2013 Hudson River Ichthyoplankton Laboratory Program and 2013 Fall Juvenile Survey;
- Appendix B – Physical/Chemical Parameters;
- Appendix C – Numbers of Fish Collected in the Long River (1988-2013), Fall Juvenile (1985-2013), and Beach Seine (1985-2013) Surveys;
- Appendix D – Density and Standing Crop Estimates;
- Appendix E – Temporal and Geographical Indices;
- Appendix F – Annual Abundance Indices; and

- Appendix G – Length Frequency Distribution.

Link to Chapter 2

Table 1-1 Fish Species Treated in Depth in the 2013 Year Class Report

Common Name	Scientific Name[1]
Alewife	*Alosa pseudoharengus*
American shad	*Alosa sapidissima*
Atlantic sturgeon	*Acipenser oxyrinchus*
Atlantic tomcod	*Microgadus tomcod*
Bay anchovy	*Anchoa mitchilli*
Blueback herring	*Alosa aestivalis*
Bluefish	*Pomatomus saltatrix*
Gizzard shad	*Dorosoma cepedianum*
Hogchoker	*Trinectes maculatus*
Rainbow smelt	*Osmerus mordax*
Shortnose sturgeon	*Acipenser brevirostrum*
Spottail shiner	*Notropis hudsonius*
Striped bass	*Morone saxatilis*
Weakfish	*Cynoscion regalis*
White catfish	*Ameiurus catus*
White perch	*Morone americana*

1. Names listed in Nelson et al. 2004.

CHAPTER 3
PHYSICAL/CHEMICAL PARAMETERS

This chapter provides graphs on the parameters of temperature, salinity, and dissolved oxygen as measured during the 2013 surveys. In addition, freshwater flow data obtained from the U.S. Geological Survey (USGS) for the Green Island Dam near Troy, New York, and daily water temperature data from Poughkeepsie's Water Treatment Facility and the near-by USGS gaging site are also graphed. Supporting tables are presented in Appendix B.

3.1 GREEN ISLAND DAM FLOWS

During 2013, daily freshwater flow for Green Island, New York was estimated from discharge data provided by the USGS for the Hudson River above Lock 1, the Mohawk River at Cohoes, and the Mohawk River diversion at Crescent Dam. At the time of publication, the data from October through December 2013 were provisional.

Links to Graphs	Figure	Supporting Appendix Table
Daily freshwater flow rates for 2013	3-1	B-1
Monthly freshwater flow rates for 2013	3-1	B-2
Monthly average freshwater flow rates for 1974 to 2013	3-1	B-3
Average annual freshwater flow for 1947 to 2013	3-2	B-4

3.2 HUDSON RIVER WATER TEMPERATURES NEAR POUGHKEEPSIE

Long-term (since 1951) daily temperature records are available from Poughkeepsie's Water Treatment Facility, located just north of the City of Poughkeepsie, New York, at RM 77. In addition, water temperature records dating back to 1993 are available from the USGS gaging site (#01372058) on the Hudson River 2.3 miles below Poughkeepsie, New York, at RM 72. Because of the consistency and verification of the USGS records, they were substituted for the Water Treatment Facility records beginning with 1993 and continuing to 2013. Temperature records from the Water Treatment Facility were retained for 1951 through 1992.

Links to Graphs	Figure	Supporting Appendix Table
Daily water temperatures for 2013	3-3	B-5
Average, minimum, and maximum temperatures for 1951 to 2012	3-3	B-5
Average annual water temperature for 1951 to 2013	3-4	B-6

3.3 HUDSON RIVER SURVEYS

In situ measurements of water temperature (°C), dissolved oxygen (mg/L), and specific conductance (microsieman/cm at 25°C) were taken with calibrated meters at fixed river mile and strata stations in conjunction with biological sampling for the 2013 LRS and FJS. These three parameters were also measured with each sample of the 2013 BSS. Salinity data were computed from conductivity data as detailed in Chapter 2.

Links to Graphs	Figure	Supporting Appendix Table
Weekly temperatures for LRS/FJS for 2013	3-5	B-7
Weekly average, minimum, and maximum temperatures for LRS/FJS for 1974 to 2012	3-5	---
Average annual temperature for LRS/FJS for 1974 to 2013	3-5	B-8
Weekly temperatures for BSS for 2013	3-6	B-9
Weekly average, minimum, and maximum temperatures for BSS for 1974 to 2012	3-6	---
Average annual temperature for BSS for 1974 to 2013	3-6	B-10
Weekly salinity for LRS/FJS for 2013	3-7	B-11
Weekly dissolved oxygen for LRS/FJS for 2013	3-8	B-13
Weekly average, minimum, and maximum dissolved oxygen for LRS/FJS for 1974 to 2012	3-8	---
Average annual dissolved oxygen for LRS/FJS for 1974 to 2013	3-8	B-14
Weekly dissolved oxygen for BSS for 2013	3-9	B-15
Weekly average, minimum, and maximum dissolved oxygen for BSS for 1974 to 2012	3-9	---
Average annual dissolved oxygen for BSS for 1974 to 2013	3-9	B-16

Link to Chapter 4

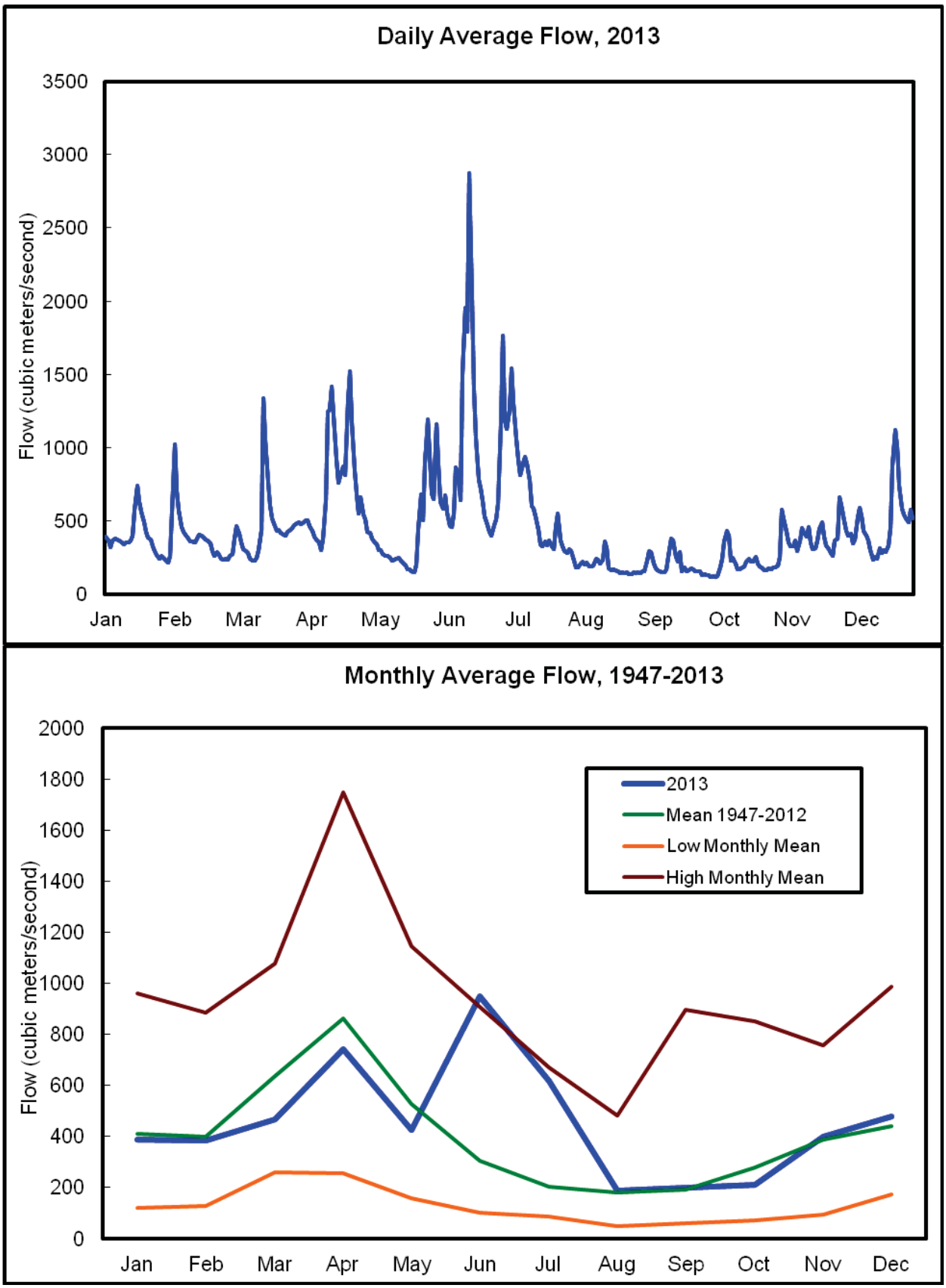


Figure 3-1. Hudson River daily average flow rate in 2013 and monthly average flow rates from 1947 to 2013, Green Island, New York. (Note: Data for October through December 2013 are provisional.)

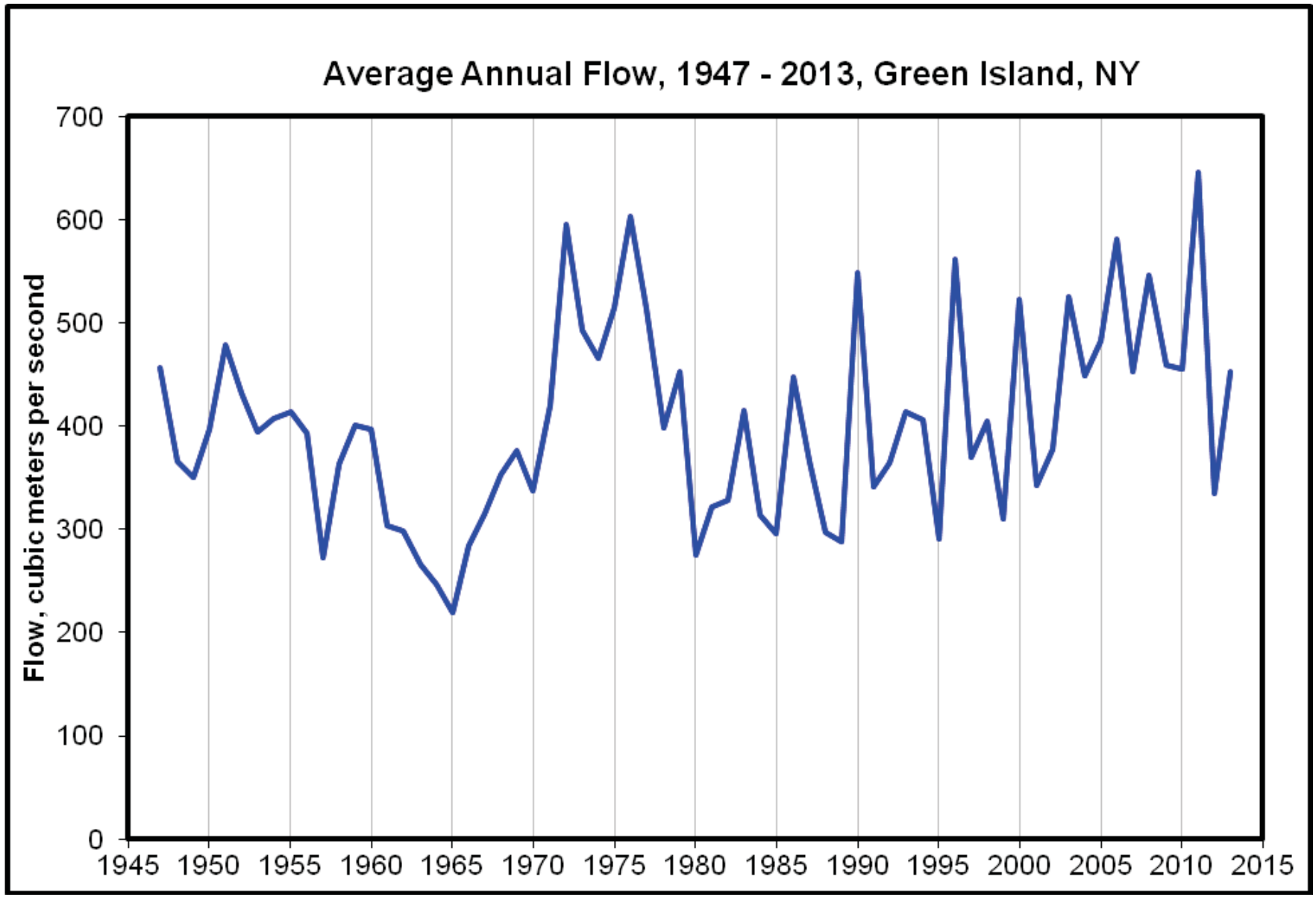


Figure 3-2. Average annual Hudson River flow from 1947 to 2013, Green Island, New York. (Note: Data for 2013 are provisional.)

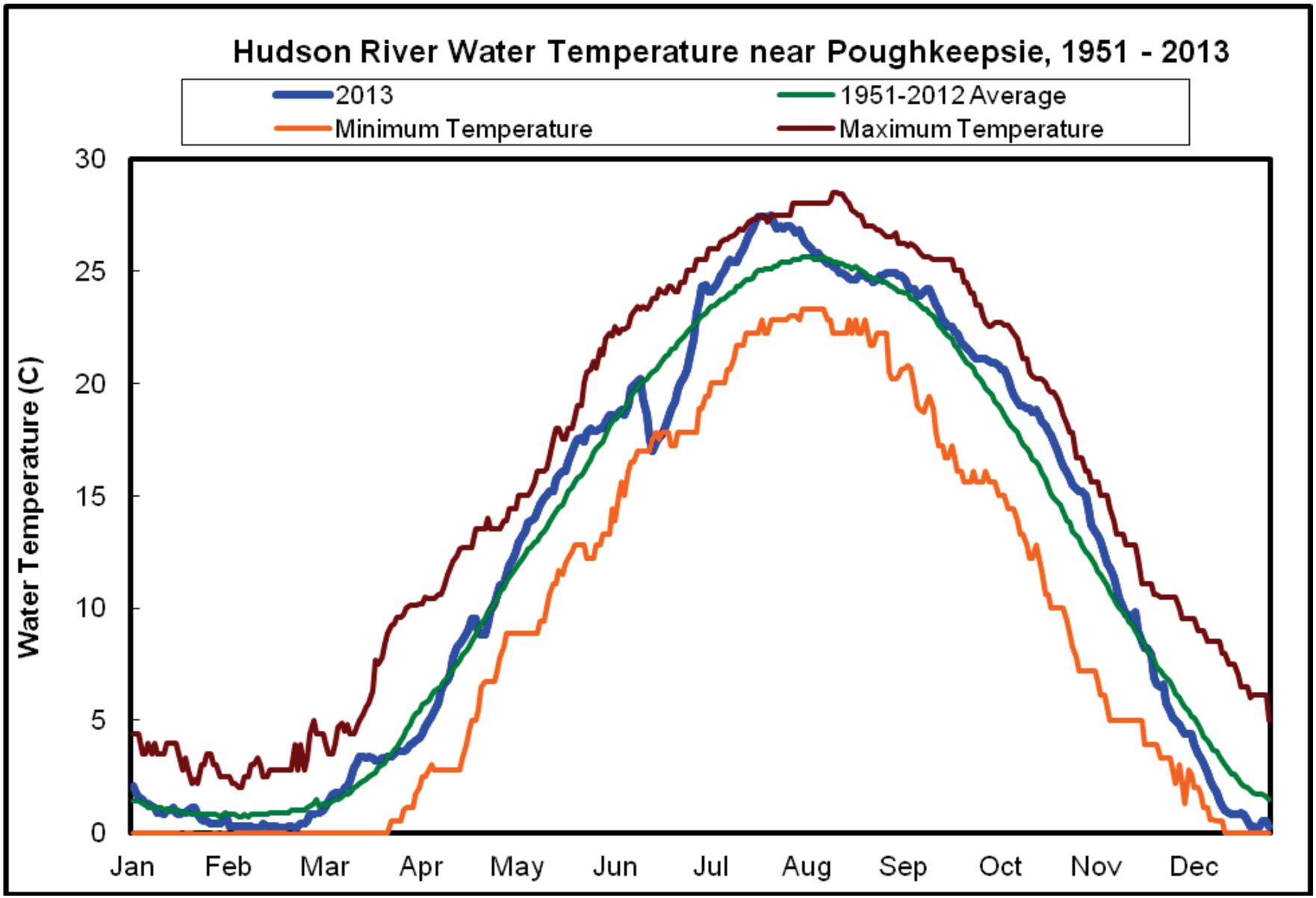


Figure 3-3. Seasonal variations in water temperature from 1951 to 2013 from Hudson River near Poughkeepsie. (Data from 1951 through 1992 from Poughkeepsie's Water Treatment Facility. Data from 1993 through 2013 from USGS gaging site 01372058 Hudson River below Poughkeepsie, NY.)

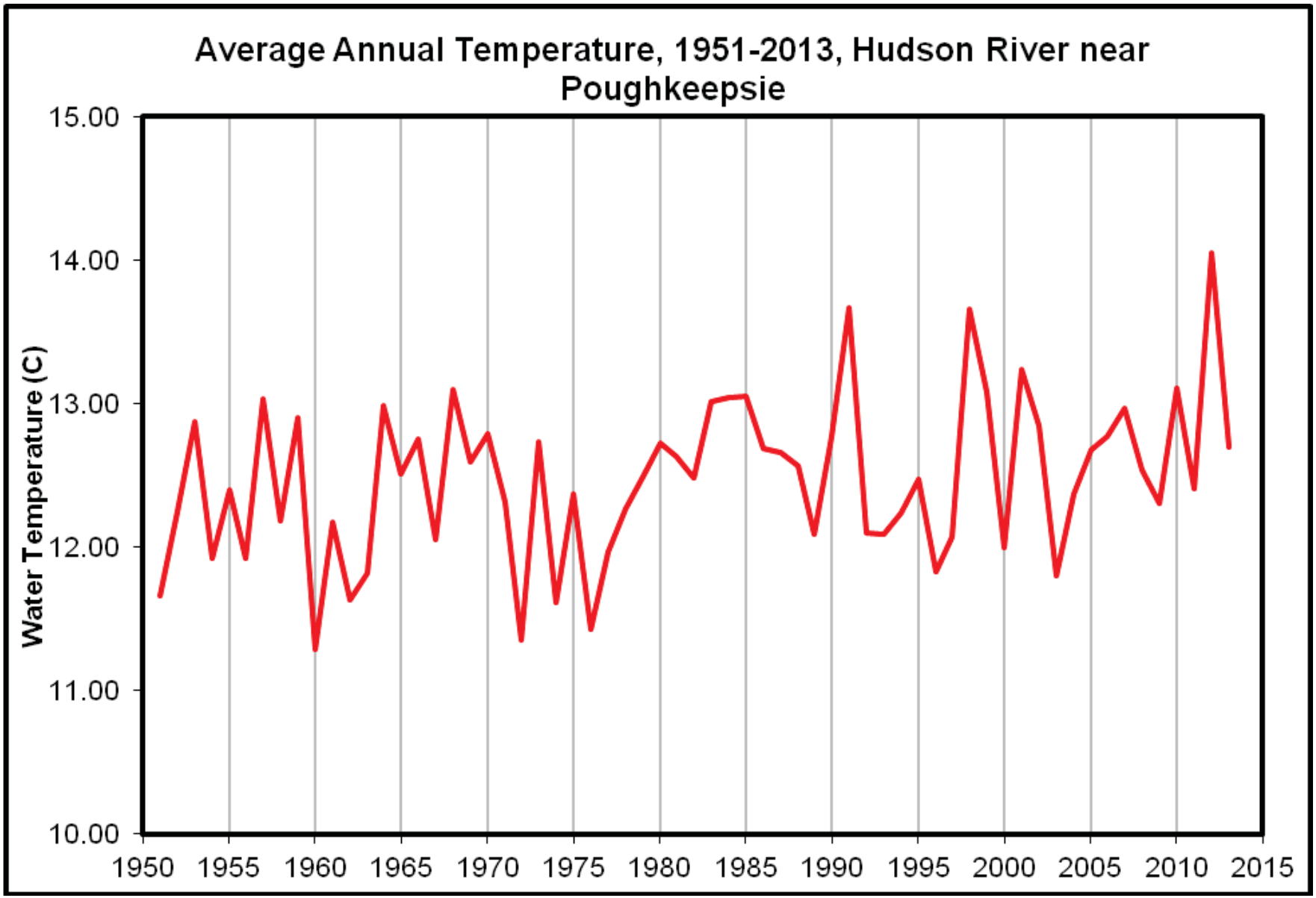
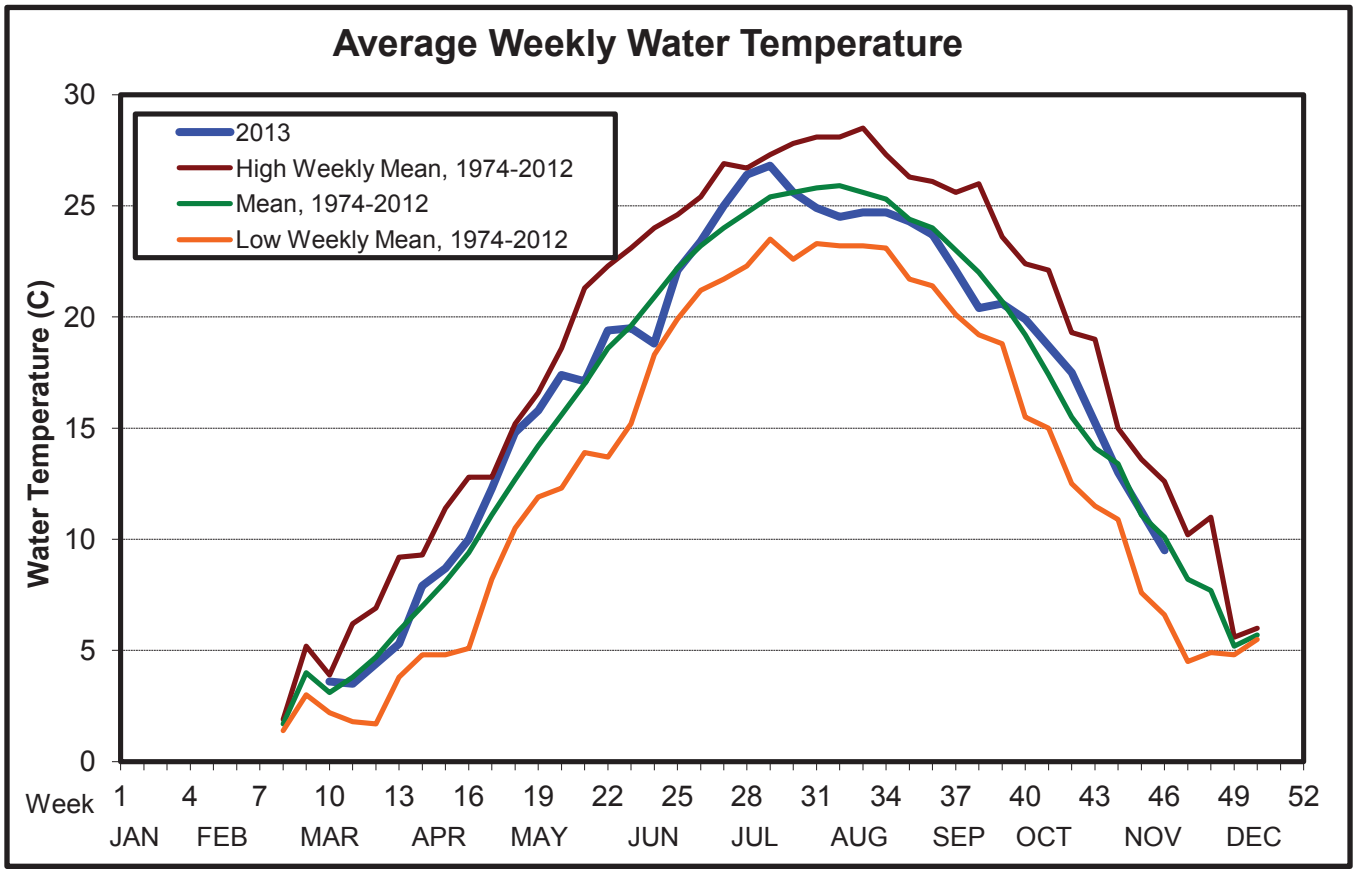


Figure 3-4. Average annual water temperature from 1951 to 2013 from Hudson River near Poughkeepsie. (Data from 1951 through 1992 from Poughkeepsie's Water Treatment Facility. Data from 1993 through 2013 from USGS gaging site 01372058 Hudson River below Poughkeepsie, NY.)

Long River/Fall Juvenile Survey



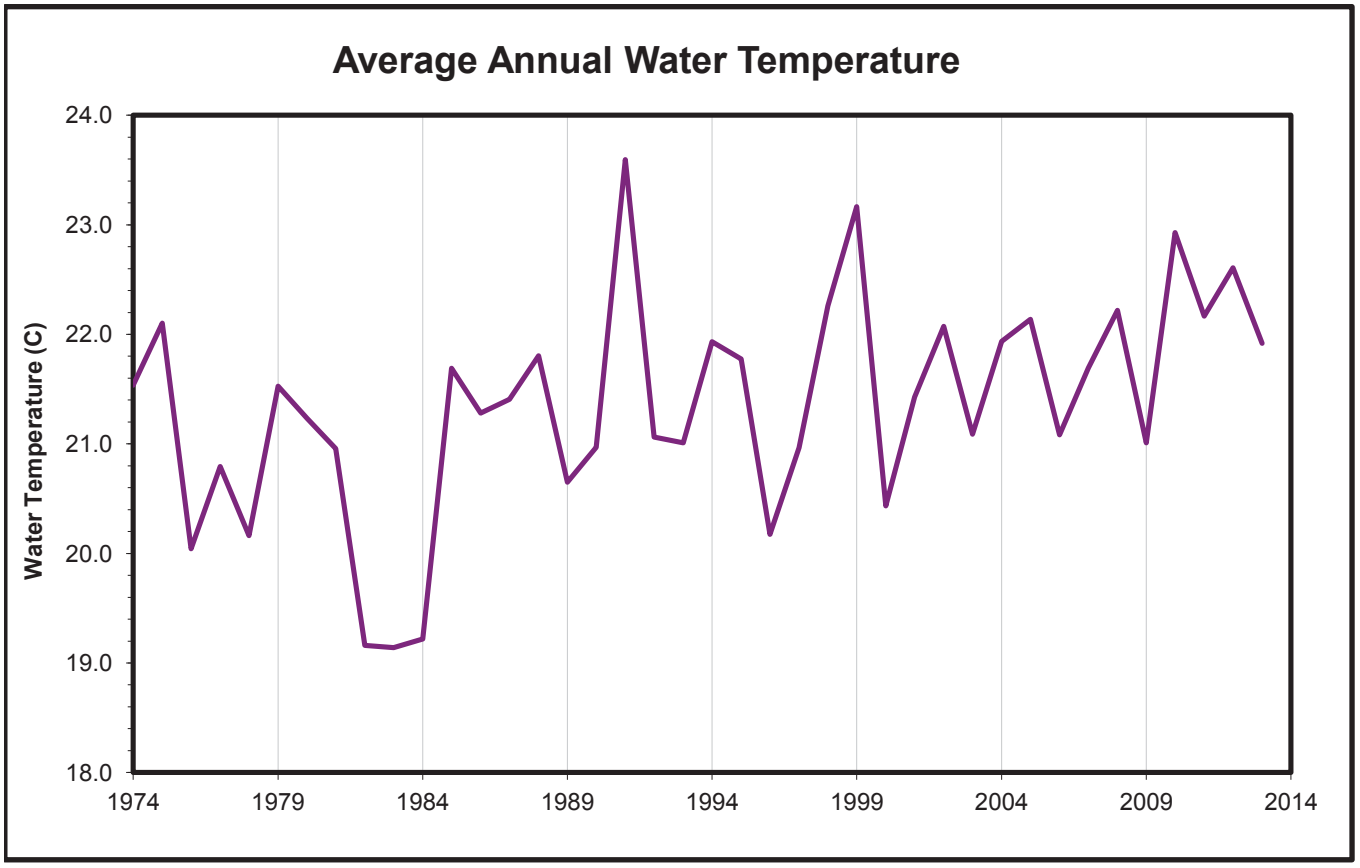
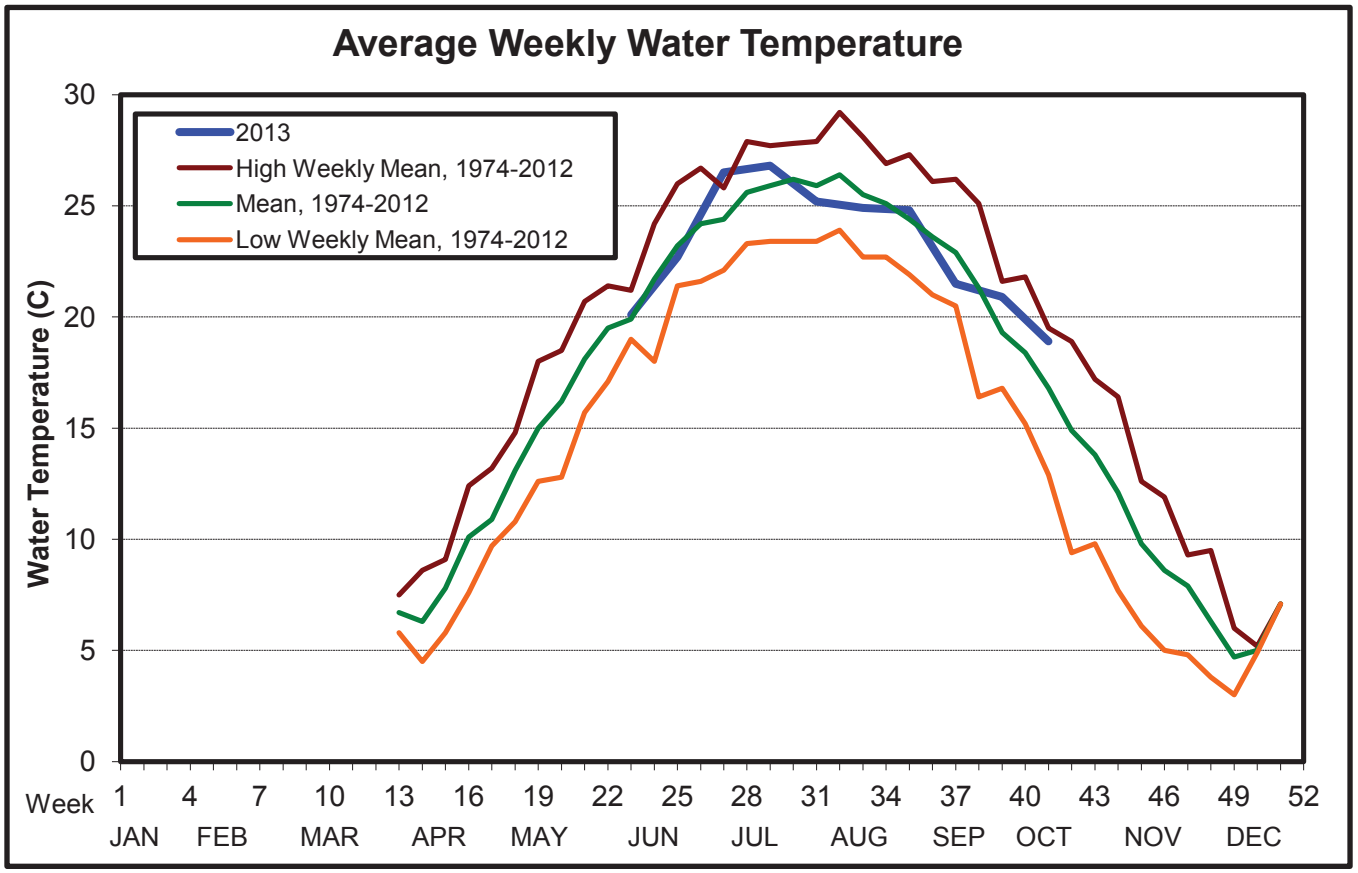


Figure 3-5. Seasonal and annual variations in water temperature from the Long River/Fall Juvenile surveys, 1974 - 2013.

Beach Seine Survey



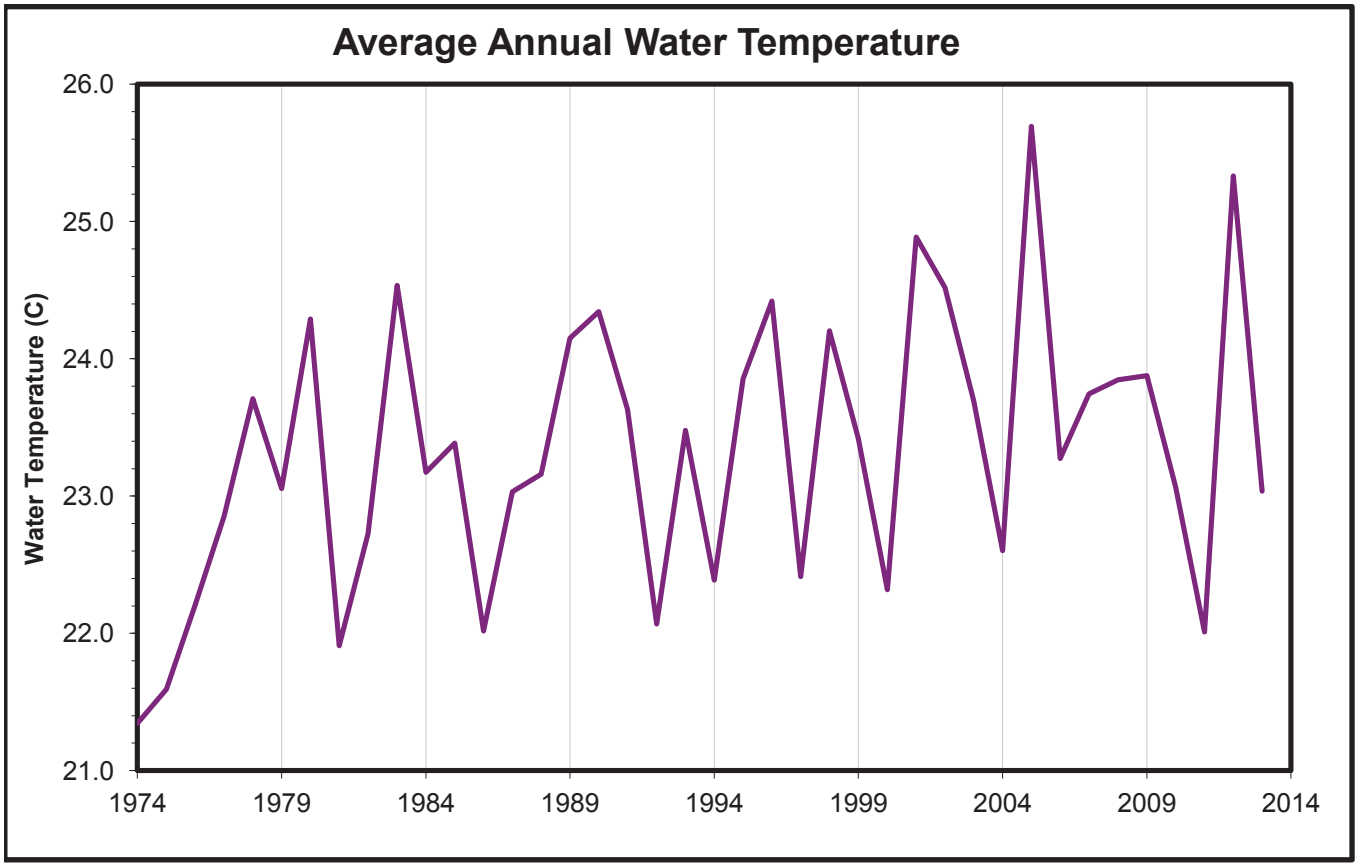


Figure 3-6. Seasonal and annual variations in water temperature from the Beach Seine surveys, 1974 - 2013.

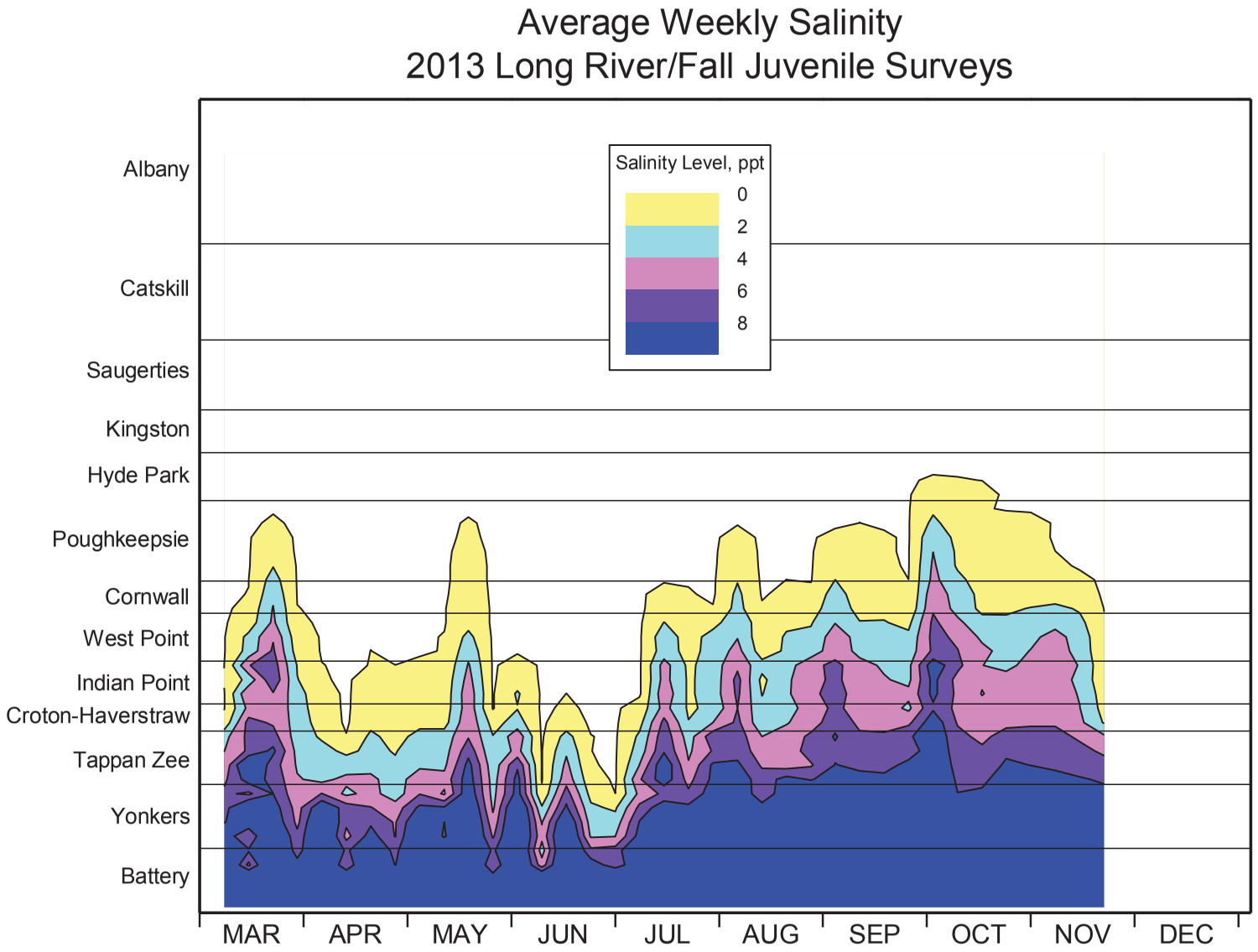
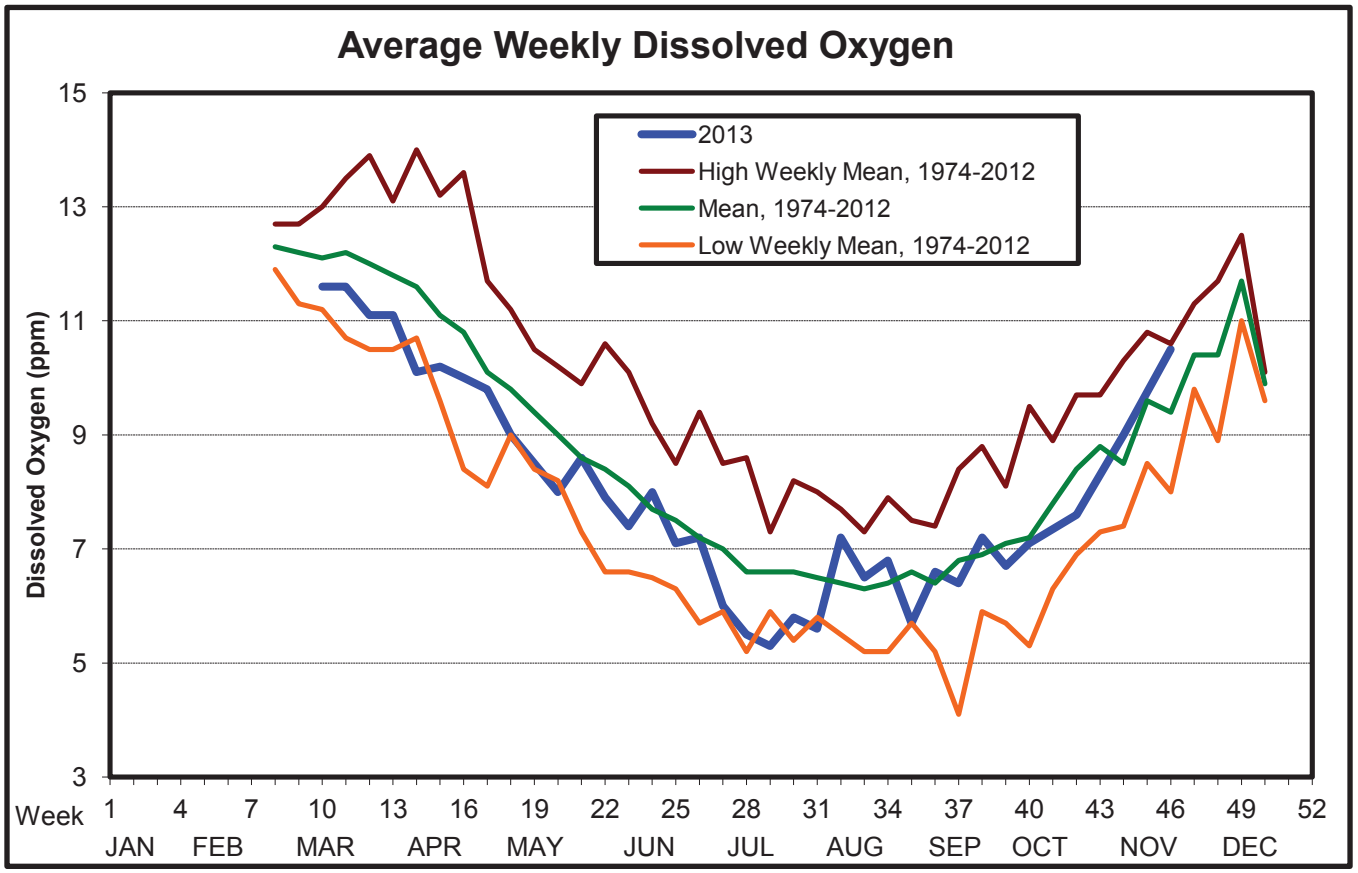


Figure 3-7. Seasonal variations in average weekly salinity from the 2013 Long River/Fall Juvenile surveys.

Long River/Fall Juvenile Survey



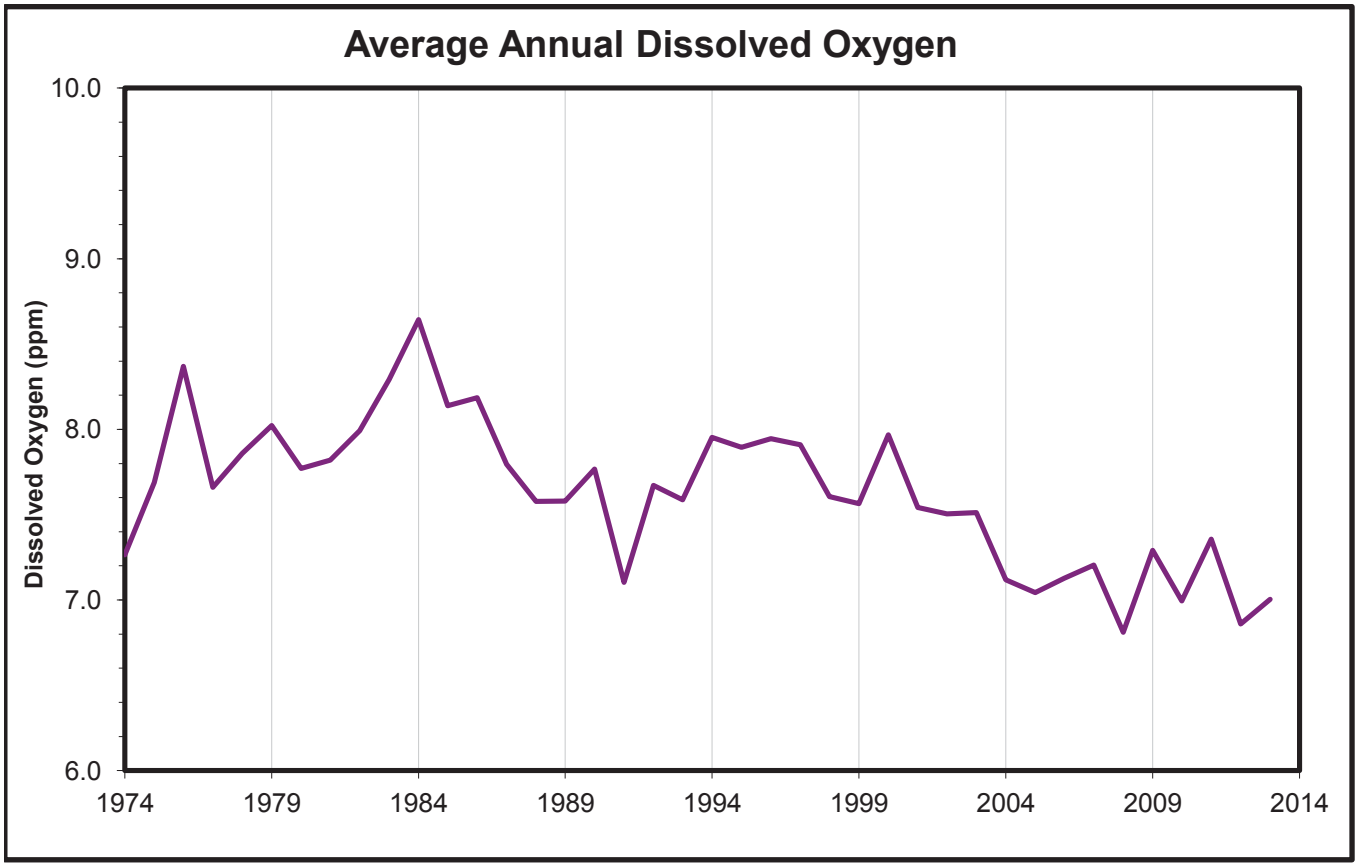
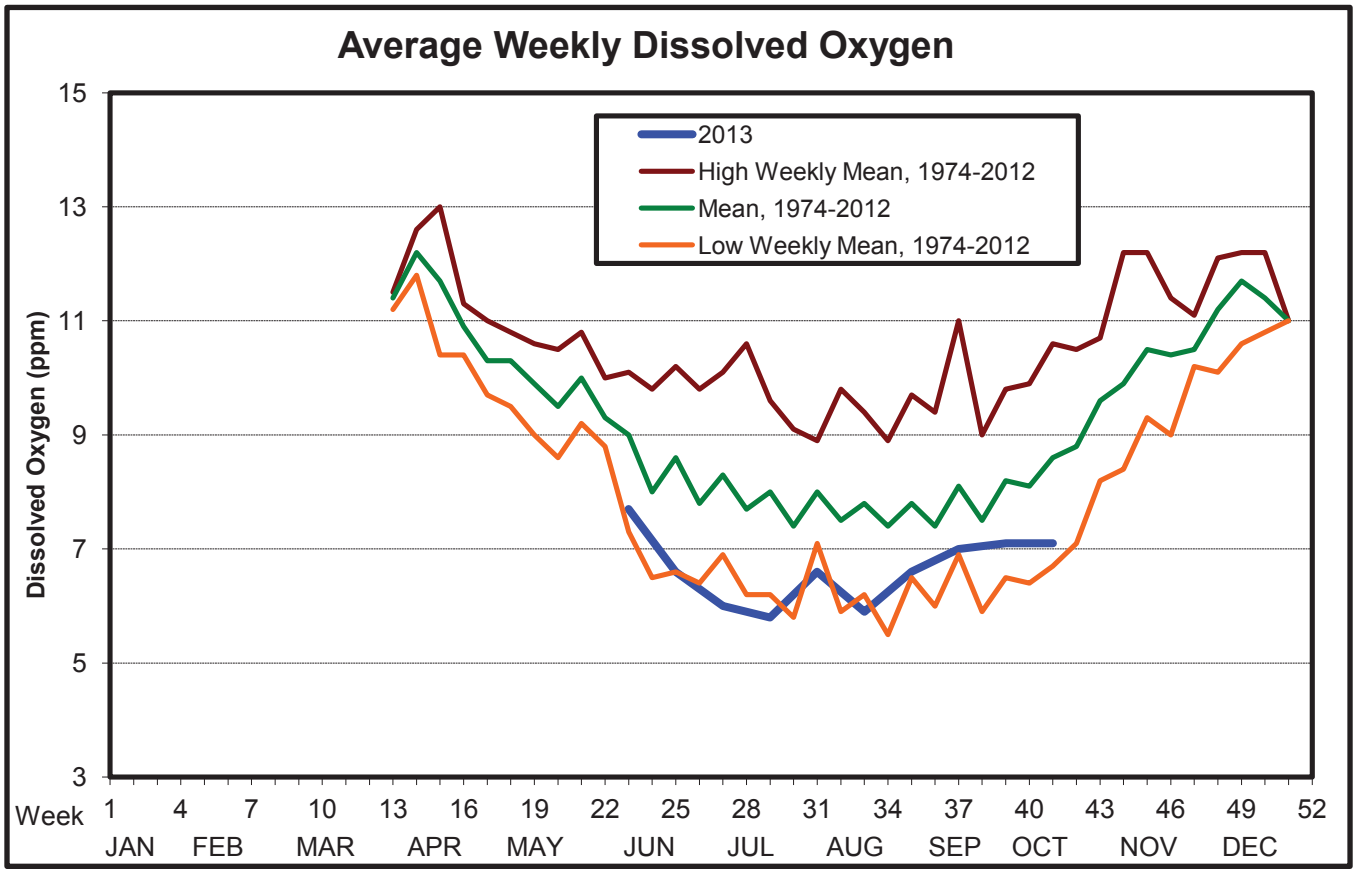


Figure 3-8. Seasonal and annual variations in dissolved oxygen from the Long River/Fall Juvenile surveys, 1974 - 2013.

Beach Seine Survey



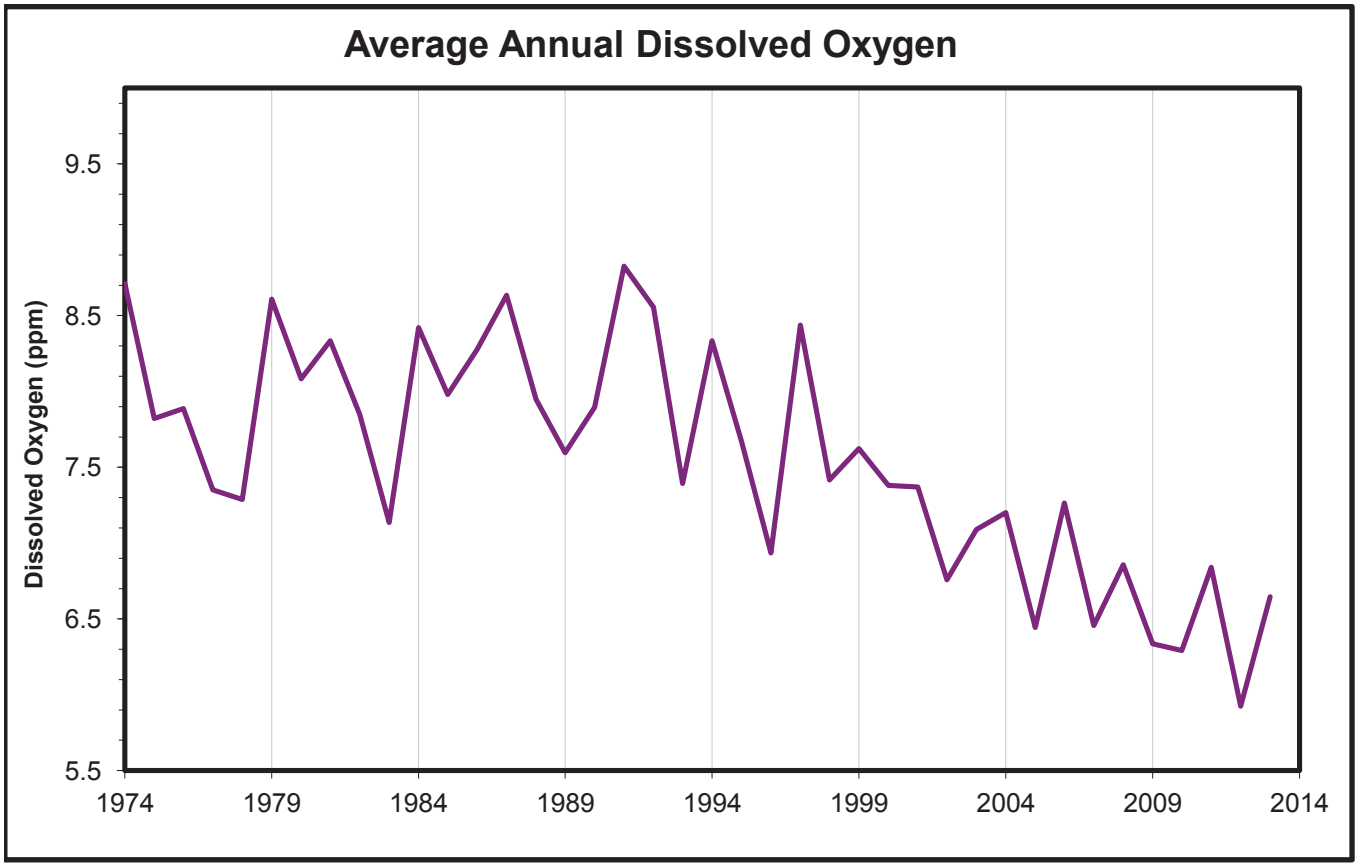
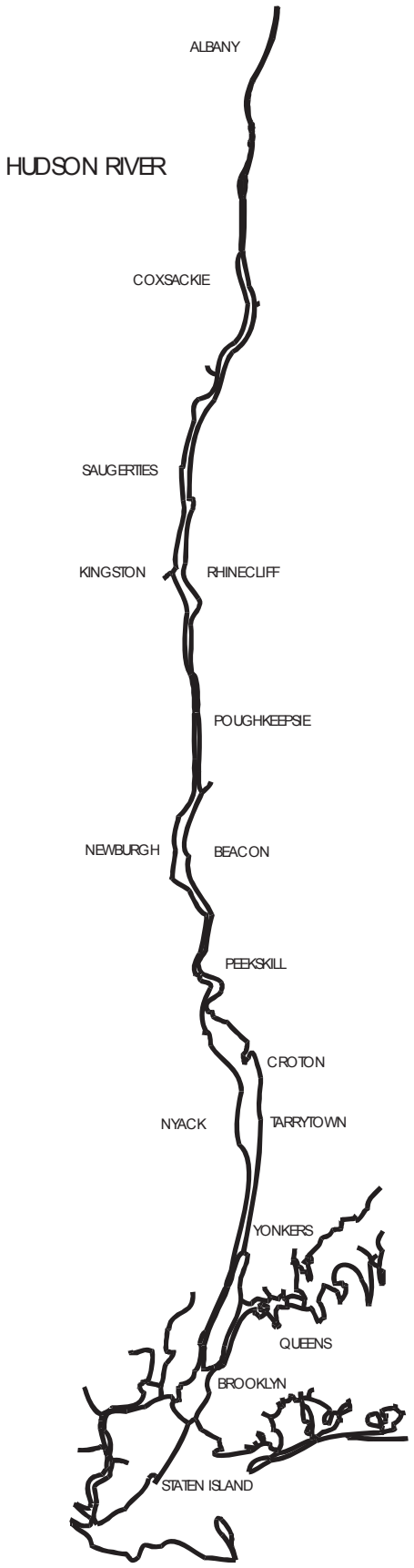


Figure 3-9. Seasonal and annual variations in dissolved oxygen from the Beach Seine surveys, 1974 - 2013.



2013 YEAR CLASS REPORT

for the Hudson River Estuary Monitoring Program

Prepared on behalf of

Entergy Nuclear Indian Point 2 L.L.C.
Entergy Nuclear Indian Point 3 L.L.C.
Entergy Nuclear Operations, Inc.
NRG Bowline L.L.C.

Prepared by

ASA Analysis & Communication
Solutions through Science

2013 Year Class Report for the Hudson River Estuary Monitoring Program

Prepared on behalf of

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