



Overview

The New York State Department of Environmental Conservation (NYSDEC) Hudson River Estuary Program and National Estuarine Research Reserve support a citizen science juvenile eel monitoring program to observe the number of juvenile eels in tributaries of the Hudson River. Along with DEC staff, trained volunteers including college interns, high school students, teachers, watershed group members, and local residents check specialized nets daily for eels. The project provides crucial baseline data on young eel populations in the Hudson River, and gets students and community members into their local streams. This report summarizes data collected by students and volunteers at several sites along the Hudson River estuary.

Year	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE Total Eels Caught
2008	2,388	16.6	181	1.8	2,569	17.5
2009	7,740	34.8	430	1.7	8,170	36.5
2010	10,603	21.6	1,411	3.2	12,014	24.8
2011	6,964	16.1	1301	3.4	8,265	19.5
2012	85,166	128.9	1,432	1.9	86,598	130.8
2013	103,123	188.3	1,647	2.3	104,770	190.6
2014	49,760	124.9	683	1.5	50,443	126.5
2015	48,158	114.6	1,298	3.3	49,456	117.8
2016	142,770	221.5	2,383	3.6	145,153	215.1
Total	456,672		10,766		467,438	
Average		95.3		2.5		97.7

Table 1. Total eels caught and eels caught per day as a catch per unit effort (CPUE) combined for all sampling sites in that year. In this study, eels are separated into two age classes: young of year (YOY) glass eels, and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels in late spring), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

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The 2016 Celebration at Fall Kill, Poughkeepsie.

Methods

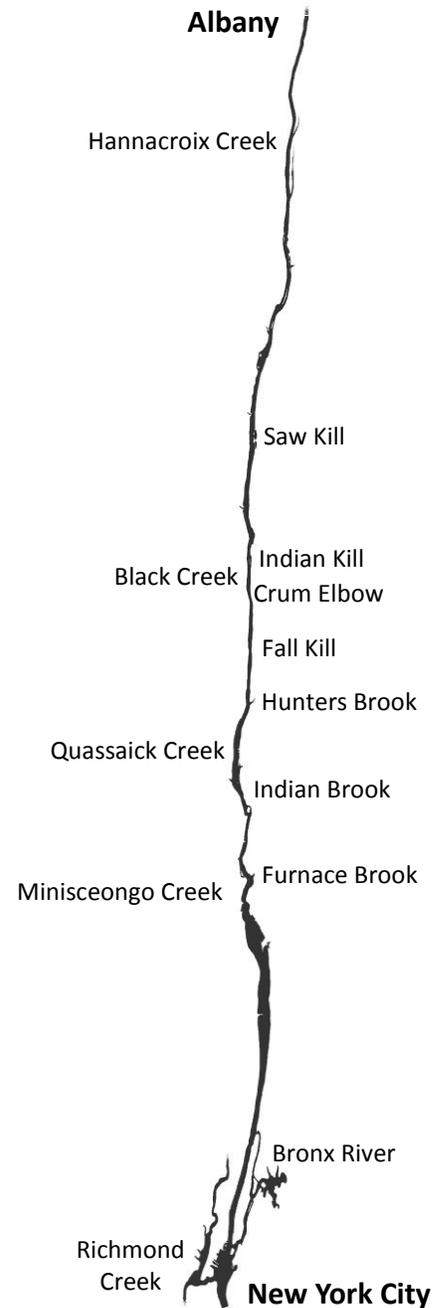
Sampling protocols follow those outlined by the Atlantic States Marine Fisheries Commission (ASMFC)¹ and on previous Hudson River research following ASMFC protocols².

Sampling Sites

Sampled streams are all tributaries to the Hudson River estuary in New York except the Bronx River and Richmond Creek. Net placement is close to the mouth of the stream, and as close to the head of tide as possible, depending on the stream's profile and accessibility.

RM	Stream	County	Years of Sampling
132	Hannacroix Creek	Greene	2010-2016
98	Saw Kill	Dutchess	2003-2016
85	Indian Kill	Dutchess	2016
84	Black Creek	Ulster	2010-2016
82	Crum Elbow Creek	Dutchess	2009-2015
76	Fall Kill	Dutchess	2008-2016
67	Hunters Brook	Dutchess	2016
61	Quassaick Creek	Orange	2012-2016
53	Indian Brook	Putnam	2009-2016
38	Furnace Brook	Westchester	2008-2016
37	Minisceongo Creek	Rockland	2009-2016
ER	Bronx River	Bronx	2012-2013
NY Harbor	Richmond Creek	Richmond	2012-2016

Table 2. Sample streams with their location (New York State county), the number of sampling years, and Hudson River Mile (RM) measured from the southern tip of Manhattan (RM 0), except the Bronx River which is a tributary to the East River, and Richmond Creek which is a part of New York Harbor. The Saw Kill site has been active each spring since before this citizen-science project².



¹ Atlantic States Marine Fisheries Commission. 2000. Standard procedures for American eel young of the year survey. <http://www.asmfc.org/>

² Schmidt, R.E., R. Petersson, T.R. Lake. 2006. Hudson River tributaries in the lives of fishes with emphasis on the American eel. American Fisheries Society Symposium, 51:317-330.

Sampling Gear

Fyke nets are checked daily over approximately a six to eight week period from March to May (sampling period varies slightly due to annual variability and water temperature). Nets are secured in the streambed using rebar or metal posts, and chimney blocks secure the trap end of the net against the current. The mouth of the net faces the mainstem Hudson River in order to catch eels as they swim upstream into the tributaries. The wings of the fyke net are measured to be 13.5 ft apart, and the mouth of the net is 4 ft, these measurements are standard across sites. Fyke nets all have a chain line on the bottom and a float line on top. Rocks are placed on the chain line as extra weight to minimize space underneath the net that eels can swim under. The height of the wings of the net is 4-5 ft, with a float line that allows the net to move with changing tide levels. Between the mouth of the net and the funnel trap there is a ¼ inch size exclusion mesh, so no larger animals can enter the trap. The rest of the fyke net is made with 1 mm mesh, which is small enough that glass eels cannot swim through, but still allows water to flow. Volunteers scrub the net as needed to ensure adequate water flow. Nets are removed from the stream during high flow conditions to ensure volunteer safety.

Net locations vary from year to year to accommodate streambed changes. In previous years net placement was moved to test eels' preference over fast or slow moving water. Currently most nets are placed with one wing extending up a bank and the other extending into the channel. The mouth of the net is placed in a reach with low resistance flow.

Sampling Protocol

The nets are checked every day with exceptions including inclement weather. All eels caught in the fyke net are counted, weighed and released upstream. A subset of 20 eels are weighed (the exact number weighed may depend on how many eels are caught). The number of eels weighed and the total weight is recorded, and an average individual weight is calculated. Dry weights are taken by patting the eels dry with an absorbent cloth before weighing. At all of the sites possible, eels caught are released above the first barrier to upstream migration, usually a small dam or waterfall.

Eels caught are recorded in two groups: "glass eels" and "elvers". We use these terms to describe the difference between young of the year (YOY) eels (glass eels) and eels that have been residents of the Hudson River system for at least a year (elvers). Citizen scientists are trained by DEC staff in distinguishing between the two life stages, and we include a guide at each site with color photos and tips for identifying the different stages of juvenile eels. The fyke net's exclusion mesh prevents eels larger than about 5 inches from entering the trap.

Water temperature, air temperature, weather and tide period are collected at each site every day. Some sites collect additional water quality data.

Sampling analysis

Catch per unit effort (CPUE) is a standardized value to compare eel catches across sites and years. Effort is defined by the number of days the net is in the stream fishing. Days of effort start when the first glass eel is found in the net and ends when the last glass eel is caught. Days do not count as effort if the net was removed or left untied.

Volunteer recruitment and training

Presentations are done at schools, colleges, watershed group meetings, and other groups such as scouts troops and afterschool clubs to recruit volunteers. Some presentations are done for large assemblies of students (100-200 people at a time), and some are done for smaller groups. These presentations generally include an overview of the project, information on the recent decline of eel populations, our sampling protocols, and data from past years. In addition to these general presentations, we provide *in situ* training by several DEC staff after the fyke nets are deployed to ensure proper data collection and maintenance of sampling gear. Volunteers never sample alone, there must be at least two people present to sample. At the end of the season, volunteers are asked to fill out evaluations and describe their experiences while participating in the eel project.

Left to right: A fyke net, student with glass eels and elvers about to be released, students reset the fyke net.



RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
98	Saw Kill	29	1.04	27	1	56	2	March 18	May 11
76	Fall Kill	1,228	21.5	154	2.7	1,382	24.3	April 13	May 31
38	Furnace Brook	1,131	26.5	----	----	1,131	26.3	April 19	May 31
2008 Total		2388		181		2569			
2008 Average			16.6		1.8		17.5		

Table 3. Results for all citizen science sampling sites in 2008, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year. Furnace Brook did not count elvers.

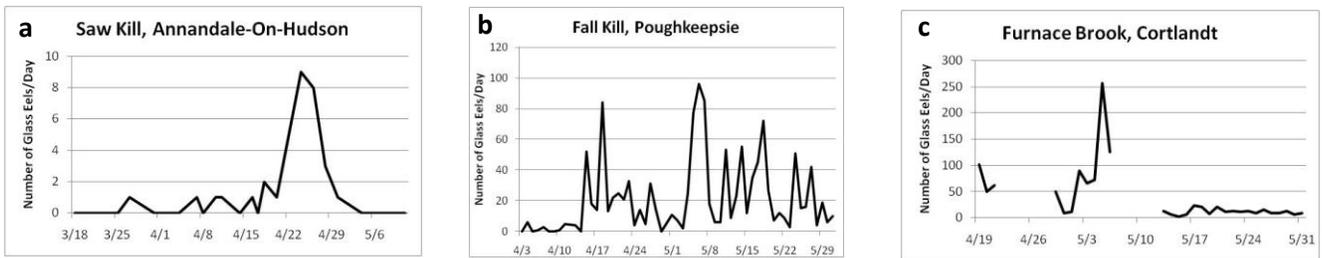


Figure 1. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2008, a) Saw Kill in Annandale-On-Hudson, b) Fall Kill in Poughkeepsie, c) Furnace Brook in Cortlandt. **Note:** Each graph has a different scale.

RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
98	Saw Kill	239	6.5	45	1.22	284	7.7	April 11	May 17
82	Crum Elbow Creek	370	6.6	82	1.5	452	8.1	March 28	May 28
76	Fall Kill	3157	49.3	124	1.9	3281	51.3	March 30	June 1
53	Indian Brook	74	1.2	120	2	194	3.2	March 25	May 25
38	Furnace Brook	3446	54.7	46	0.7	3492	55.4	March 25	May 26
37	Minisceongo Creek	454	90.8	13	2.6	467	93.4	April 25	April 29
2009 Total		7740		430		8170			
2009 Average			34.8		1.7		36.5		

Table 4. Results for all citizen science sampling sites in 2009, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

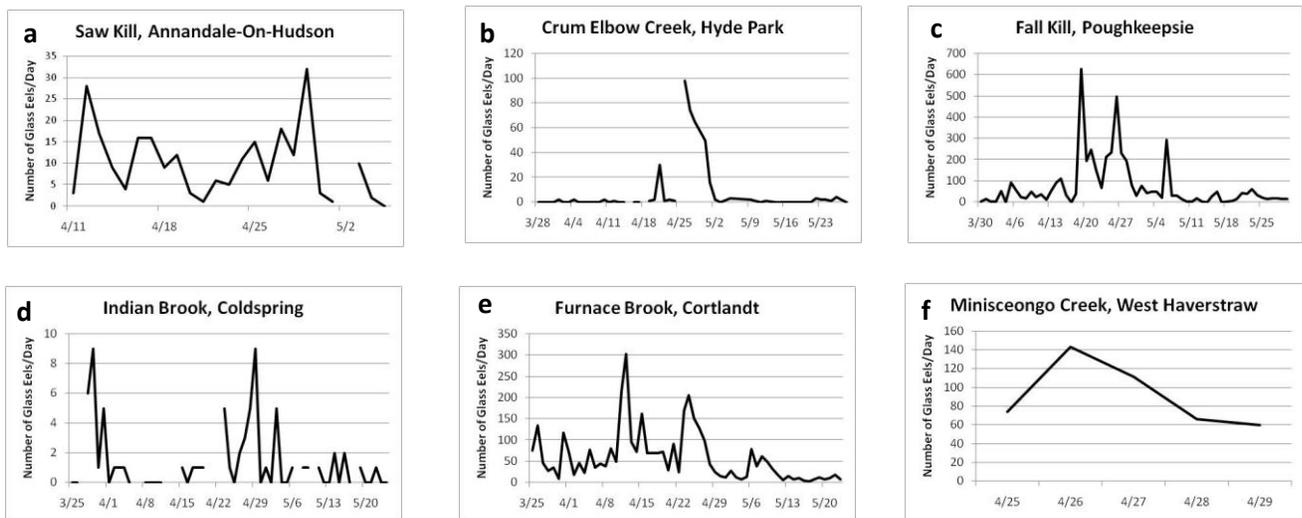


Figure 2. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2009, a) Saw Kill in Annandale-On-Hudson, b) Crum Elbow Creek in Hyde Park, c) Fall Kill in Poughkeepsie, d) Indian Brook in Cold Spring, e) Furnace Brook in Cortlandt, f) Minisceongo Creek in West Haverstraw. **Note:** Each graph has a different scale.

RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
132	Hannacroix Creek	358	9.94	279	7.8	637	17.7	April 13	May 18
98	Saw Kill	111	3.3	22	0.7	133	3.9	April 11	May 17
84	Black Creek	3571	40.6	25	2.9	3827	43.5	April 1	June 1
82	Crum Elbow Creek	1199	16.2	486	6.6	1685	22.8	April 6	May 25
76	Fall Kill	2032	35.7	265	4.7	2297	40.3	April 6	June 1
53	Indian Brook	22	0.7	53	1.7	75	2.4	April 8	May 19
38	Furnace Brook	2863	57.3	18	0.4	2881	57.6	March 26	May 20
37	Minisceongo Creek	447	9.5	32	0.7	479	10.2	March 26	May 23
2010 Total		10603		1411		12014			
2010 Average			21.6		3.2		24.8		

Table 5. Results for all citizen science sampling sites in 2010, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

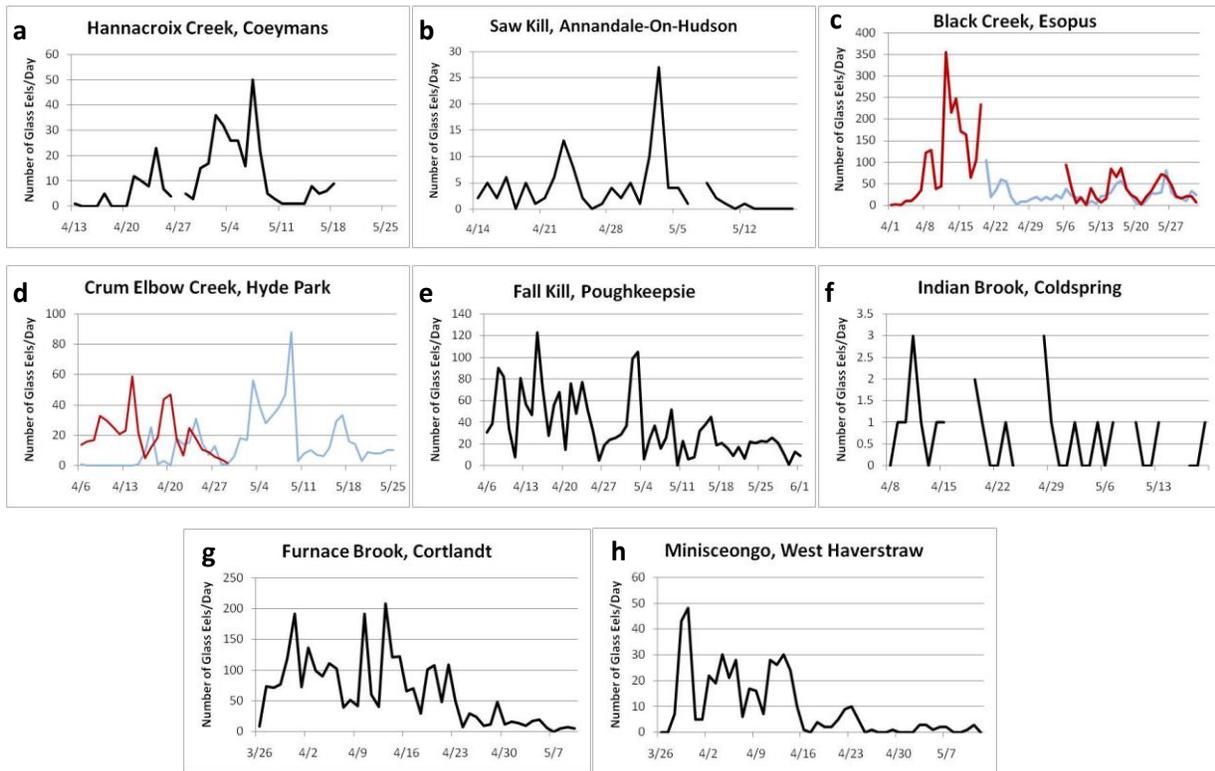


Figure 3. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2010, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Indian Brook in Cold Spring, g) Furnace Brook in Cortlandt, h) Minisceongo Creek in West Haverstraw. Red lines represent sampling along river banks, blue lines are nets in main stream channels. **Note:** Each graph has a different scale.

RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
132	Hannacroix Creek	262	10.5	124	5.0	386	15.4	May 2	June 2
98	Saw Kill	116	3	9	0.2	125	3.2	March 27	June 5
84	Black Creek	1002	15.7	163	2.5	1165	18.2	March 27	June 2
82	Crum Elbow Creek	1843	28.4	648	10	2491	38.3	March 28	June 17
76	Fall Kill	625	9.5	218	3.3	843	12.8	March 25	June 1
53	Indian Brook	38	4.2	39	4.3	77	8.6	March 31	April 22
38	Furnace Brook	2466	47.4	10	0.2	2476	47.6	March 26	May 28
37	Minisceongo Creek	612	10.6	90	1.6	702	12.1	March 27	June 1
2011 Total		6964		1301		8265			
2011 Average			16.1		3.4		19.5		

Table 6. Results for all citizen science sampling sites in 2011, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

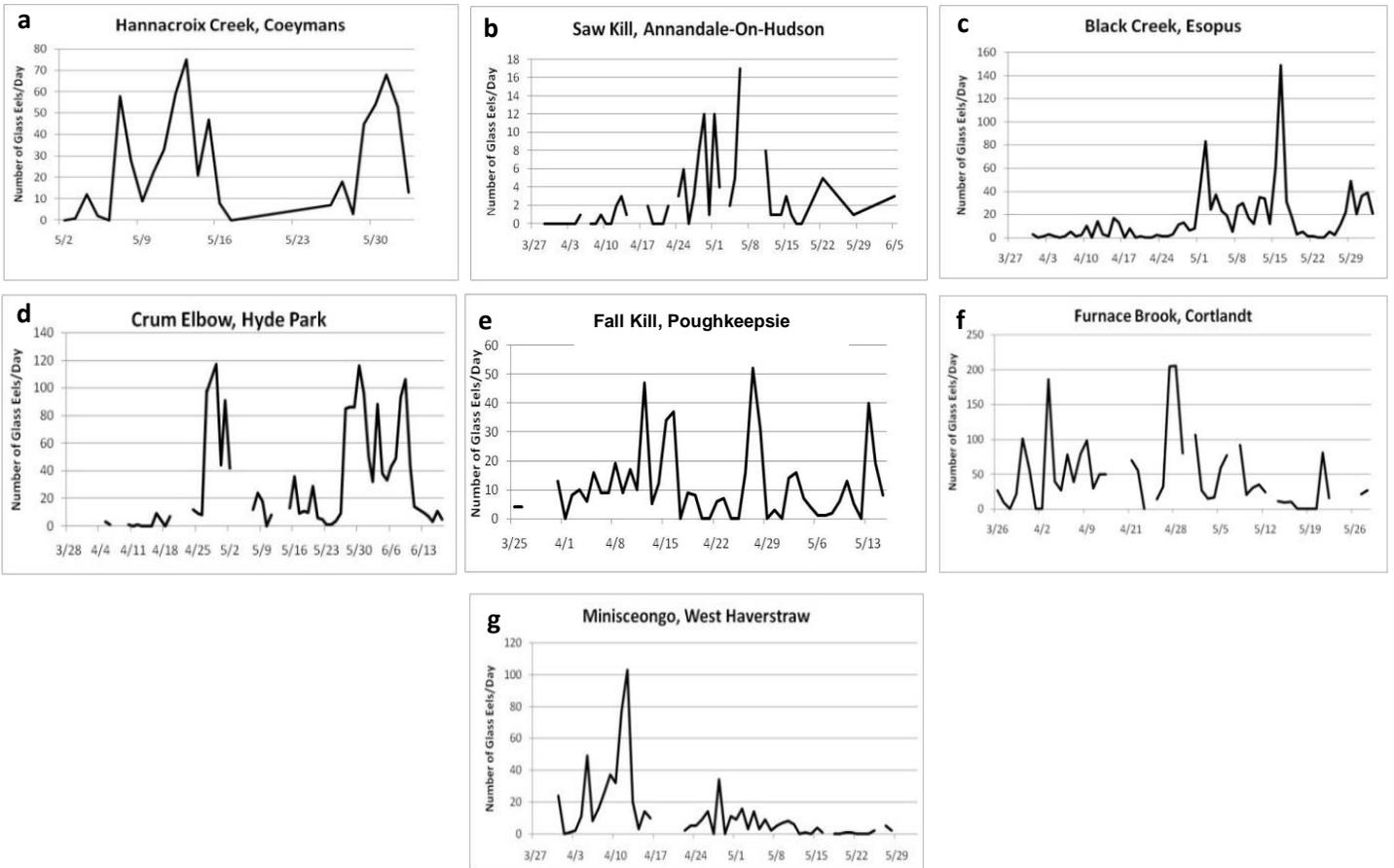


Figure 4. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2011, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum, Elbow in Hyde Park, e) Fall Kill in Poughkeepsie f) Furnace Brook in Cortlandt and g) Minisceongo in West Haverstraw. **Note:** Each graph has a different scale.

RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
132	Hannacroix Creek	2945	58.9	37	0.7	2982	59.6	March 24	May 14
98	Saw Kill	139	3.2	15	0.3	154	3.5	March 18	April 30
84	Black Creek	12408	203.4	101	1.7	12509	205.1	March 13	May 14
82	Crum Elbow Creek	22460	295.5	732	9.6	23192	305.2	March 13	May 30
76	Fall Kill	6751	103.9	198	3	6949	106.9	March 7	May 11
61	Quassaick Creek	23446	459.7	123	2.4	23569	462.1	March 20	May 11
53	Indian Brook	73	1.1	67	1	140	2.1	March 9	May 14
38	Furnace Brook	3796	58.4	23	0.4	3819	58.8	March 4	May 19
37	Minisceongo Creek	939	16.5	22	0.4	961	16.9	March 6	May 4
ER	Bronx River	172	2	107	1.3	279	3.3	March 29	May 11
NY Harbor	Richmond Creek	12037	214.9	7	0.1	12044	215.1	March 6	April 30
2012 Total		85166		1432		86598			
2012 Average			128.9		1.9		130.8		

Table 7. Results for all citizen science sampling sites in 2012, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

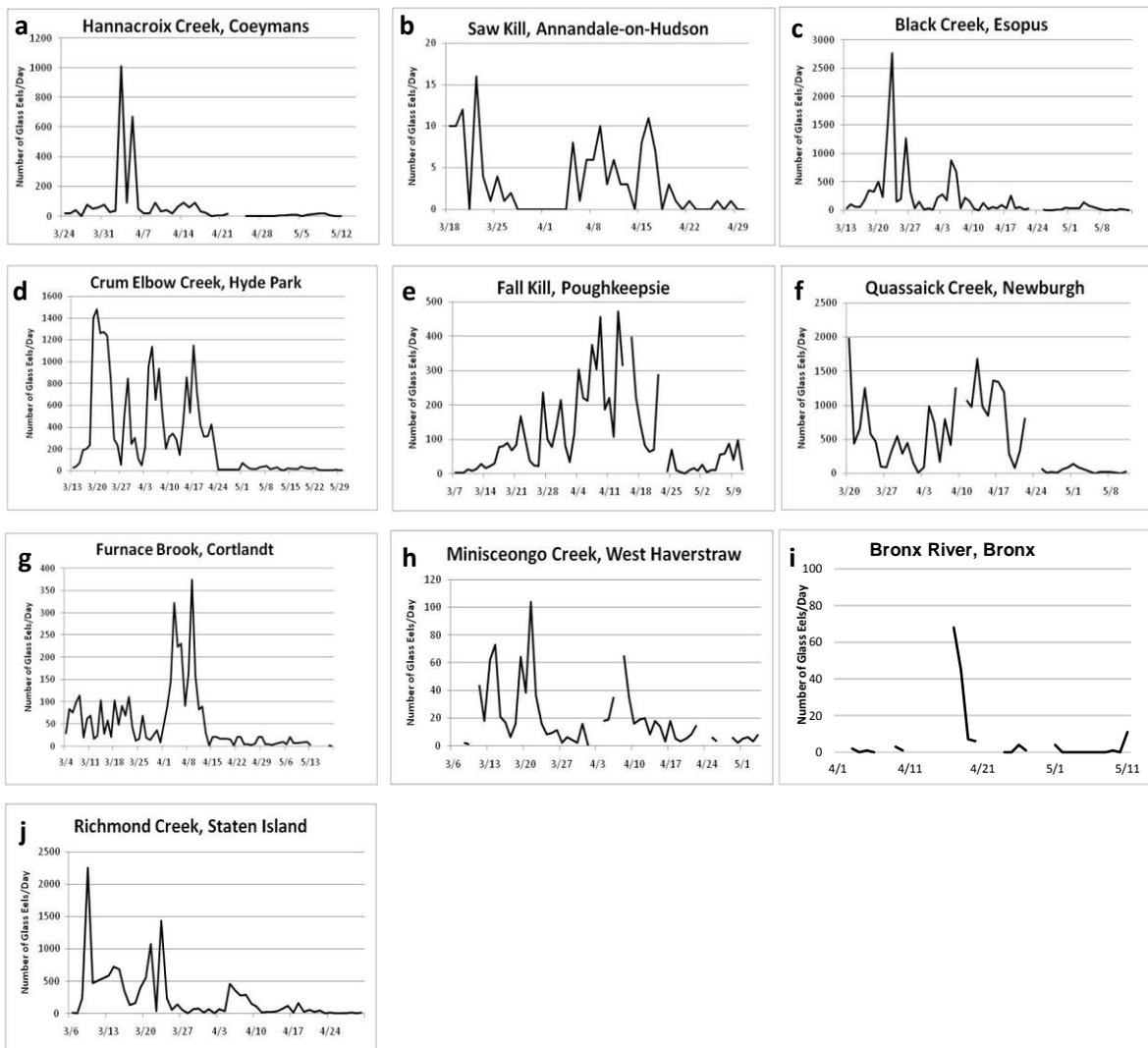


Figure 5. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2012, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Quassaick Creek in Newburgh, g) Furnace Brook in Cortlandt, h) Minisceongo Creek in West Haverstraw, i) Bronx River in the Bronx, j) Richmond Creek in Staten Island. **Note:** Each graph has a different scale.

RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
132	Hannacroix Creek	42912	913	371	7.9	43283	920.9	April 5	May 21
98	Saw Kill	1819	37.1	78	1.6	1897	38.7	April 3	May 21
84	Black Creek	19254	337.8	105	1.8	19359	339.6	March 23	May 20
82	Crum Elbow Creek	11565	110.1	724	6.9	12289	117	March 30	May 24
76	Fall Kill	6991	124.8	176	3.1	7167	128	March 27	May 24
61	Quassaick Creek	11619	400.7	46	1.6	11665	402.2	April 9	May 7
53	Indian Brook	109	2.3	73	1.5	182	3.8	March 25	May 14
38	Furnace Brook	2596	31.7	15	0.2	2611	31.8	March 11	May 15
37	Minisceongo Creek	1448	23.4	31	0.5	1479	23.9	March 11	May 15
ER	Bronx River	371	9.5	12	0.3	383	9.8	March 14	May 16
NY Harbor	Richmond Creek	4439	80.7	16	0.3	4455	81	March 5	April 30
2013 Total		103123		1647		104770			
2013 Average			188.3		2.3		190.6		

Table 8. Results for all citizen science sampling sites in 2013, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

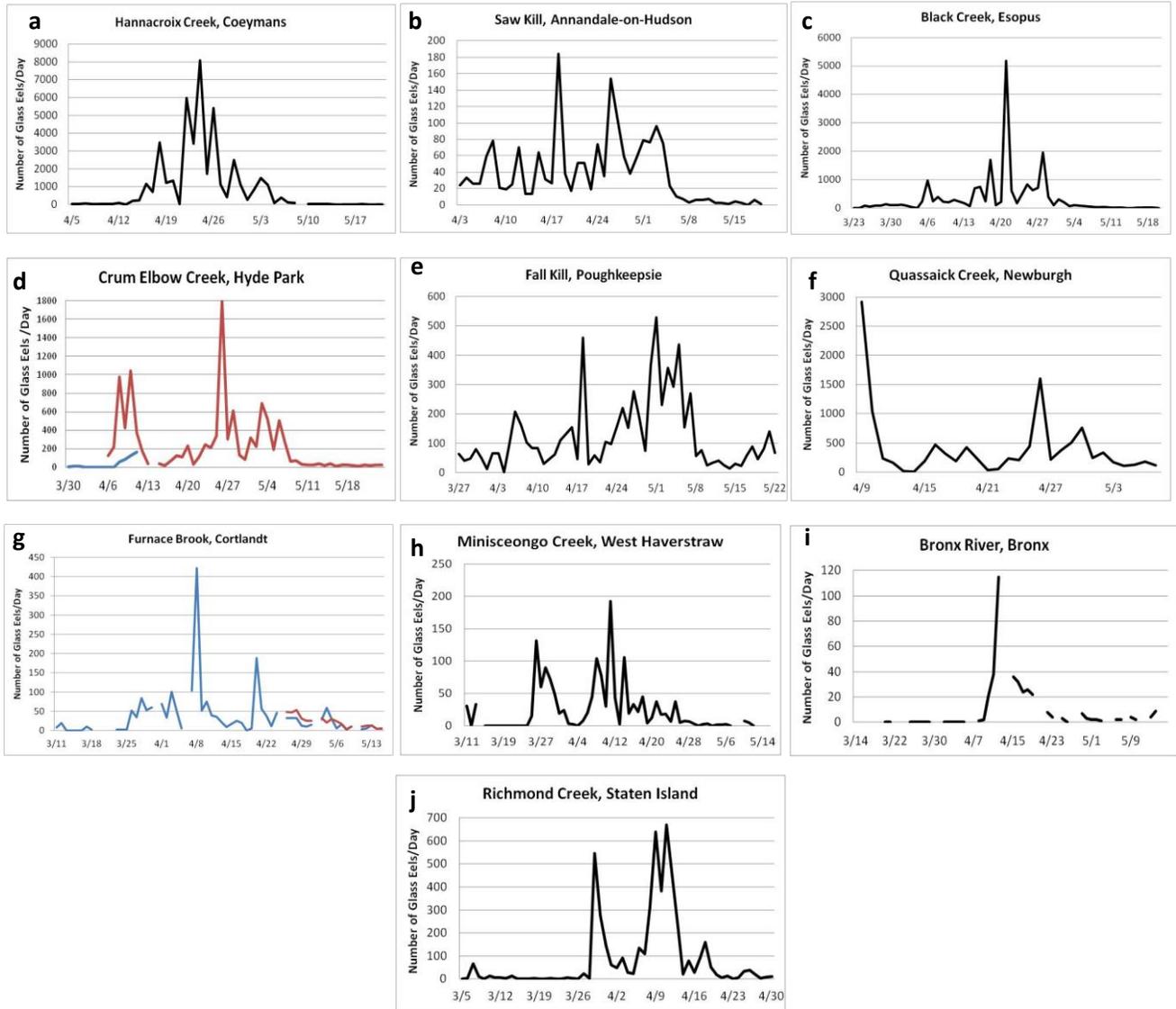


Figure 6. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2013, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Quassaick Creek in Newburgh g) Furnace Brook in Cortlandt, h) Minisceongo Creek in West Haverstraw, i) Bronx River in the Bronx, j) Richmond Creek in Staten Island. At Furnace Brook, the blue line represents a net placed in the main channel and the red line is a side channel net. At Crum Elbow, the blue line represents a western bank net and the red line represents an eastern bank net. **Note:** Each graph has a different scale.

2014 Results

RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
132	Hannacroix Creek	5499	125	91	2.07	5590	127.1	April 14	June 3
98	Saw Kill	494	11.2	55	1.3	549	12.5	April 9	May 23
84	Black Creek	3981	90.5	50	1.1	4031	91.6	March 28	May 27
82	Crum Elbow Creek	3428	87.9	105	2.7	3533	90.6	April 8	May 23
76	Fall Kill	18063	316.9	225	4	18288	320.8	March 27	May 30
61	Quassaick Creek	8020	422.1	33	1.7	8053	423.8	April 22	May 12
53	Indian Brook	42	1.3	28	0.9	70	2.1	March 28	May 16
38	Furnace Brook	2701	42.9	8	0.1	2709	43	March 25	June 2
37	Minisceongo Creek	1542	26.6	63	1.1	1605	27.7	March 24	June 1
NY Harbor	Richmond Creek	5990	124.8	25	0.5	6015	125.3	March 6	May 16
2014 Total		49760		683		50443			
2014 Average			124.9		1.5		126.5		

Table 9. Results for all citizen science sampling sites in 2014, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

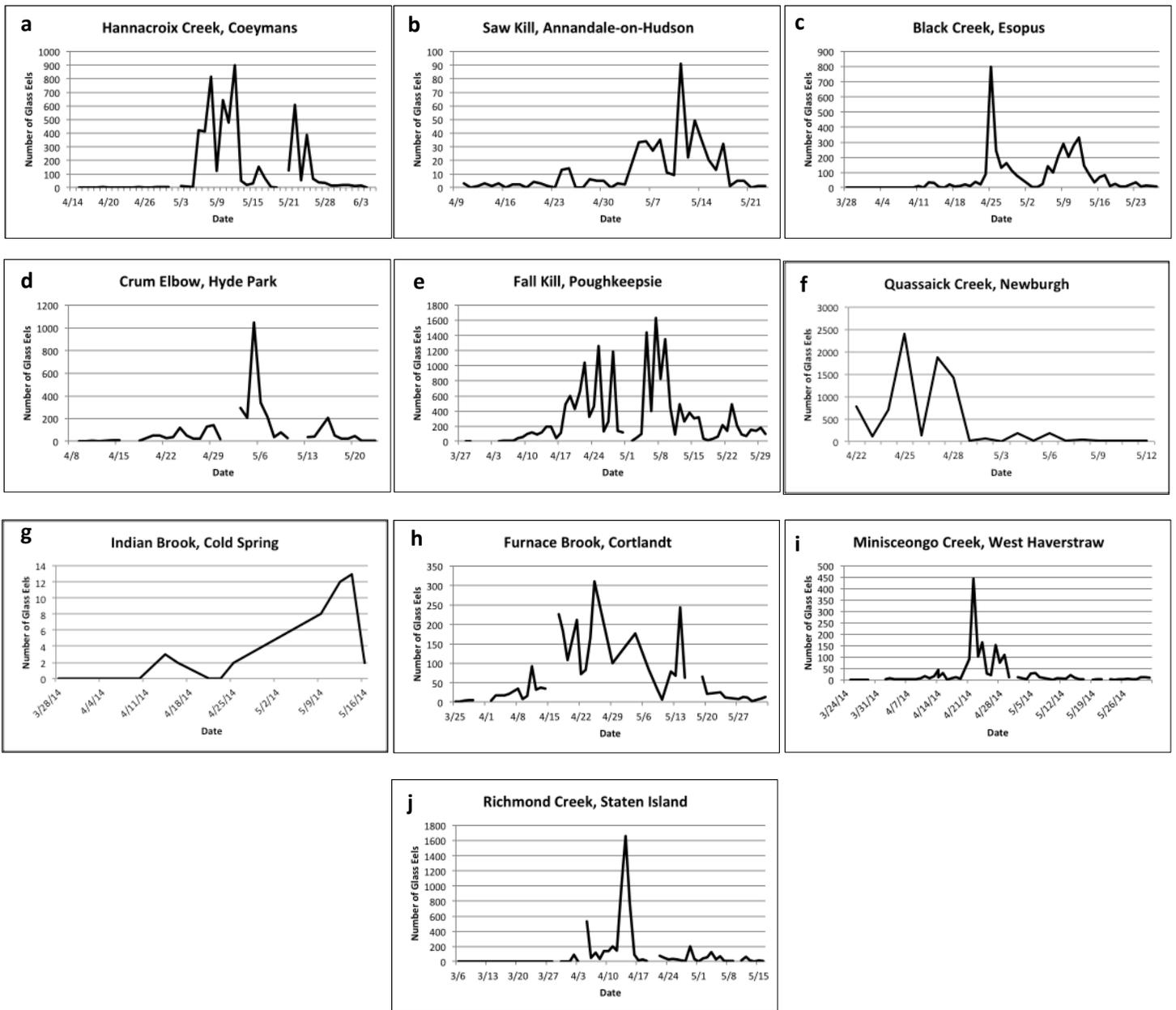


Figure 7. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2014, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Quassaick Creek in Newburgh, g) Indian Brook in Cold Spring, h) Furnace Brook in Cortlandt, i) Minisceongo Creek in West Haverstraw and j) Richmond Creek, Staten Island **Note:** Each graph has a different scale.

2015 Results

RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
132	Hannacroix Creek	180	5.5	194	5.9	374	11.3	April 25	May 30
98	Saw Kill	437	10.9	88	2.2	525	13.1	April 13	May 22
84	Black Creek	4061	78.1	248	4.8	4309	82.9	April 4	June 1
82	Crum Elbow Creek	119	14.9	25	3.1	144	18	April 11	May 18
76	Fall Kill	11250	197.4	326	5.7	11576	203.1	April 4	June 3
61	Quassaick Creek	20918	633.9	92	2.8	21010	636.7	April 15	May 20
53	Indian Brook	24	1.1	68	3.2	92	4.4	April 1	May 29
38	Furnace Brook	2542	44.6	48	0.8	2590	45.4	March 30	May 27
37	Minisceongo Creek	3832	75.1	197	3.9	4029	79	March 31	May 27
NY Harbor	Richmond Creek	4795	84.1	12	0.2	4807	84.3	March 10	May 29
2015 Total		48158		1298		49456			
2015 Average			114.6		3.3		117.8		

Table 9. Results for all citizen science sampling sites in 2015, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

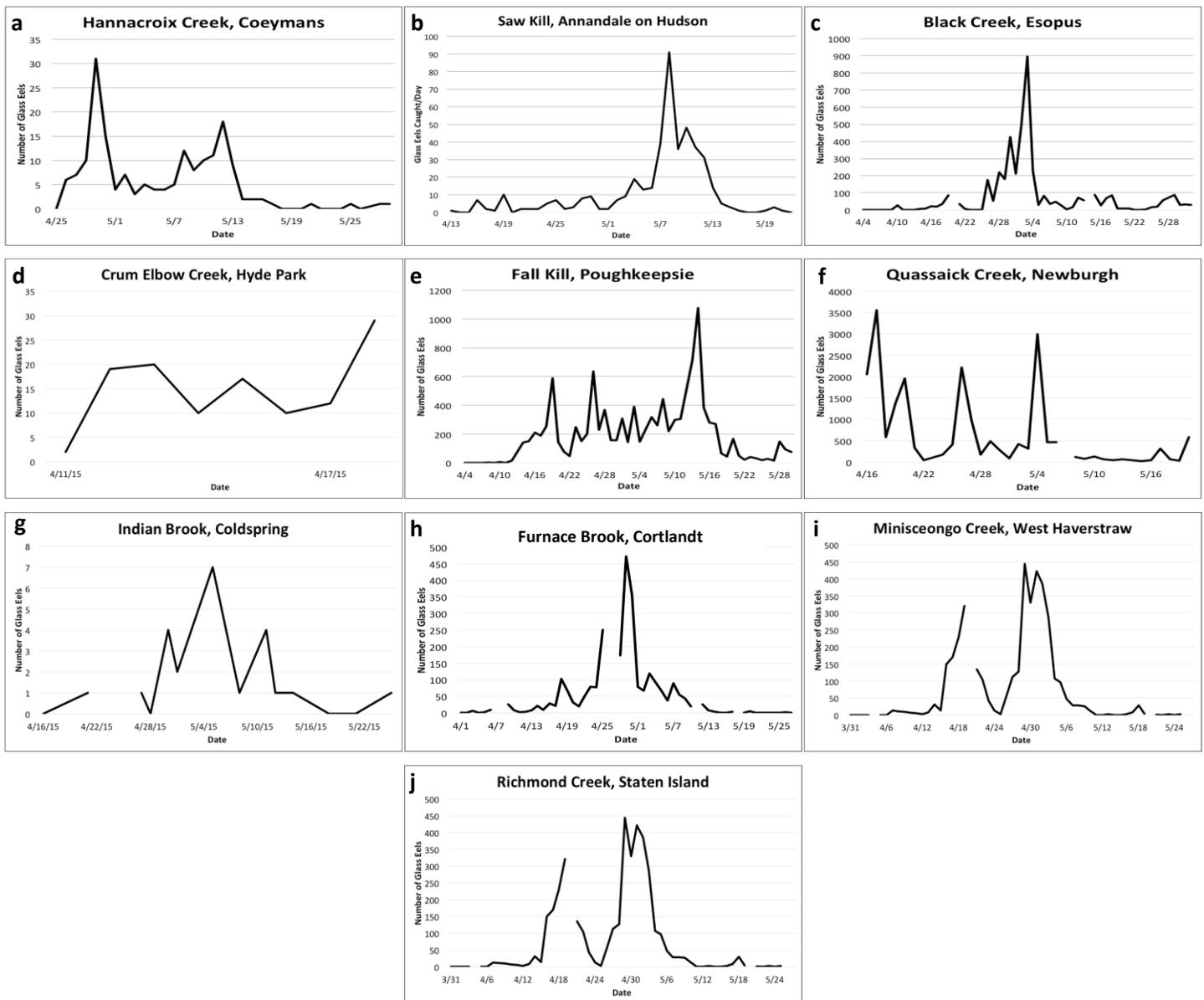


Figure 8. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2015, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Quassaick Creek in Newburgh g) Indian Brook in Cold Spring h) Furnace Brook in Cortlandt i) Minisceongo Creek in West Haverstraw and j) Richmond Creek in Staten Island. **Note:** Each graph has a different scale.

2016 Results

RM	Site	Total YOY Glass Eels	CPUE YOY Glass Eels	Total Elvers	CPUE Elvers	Total Eels Caught	CPUE (YOY and older)	Start Date	End Date
132	Hannacroix Creek	588	10.1	119	2.1	707	12.2	March 21	May 17
98	Saw Kill	3034	48.9	134	2.2	3168	51.10	March 22	May 23
85	Indian Kill	3019	42.5	165	2.3	3184	44.8	March 16	May 25
84	Black Creek	31447	483.8	580	8.9	32027	492.7	March 17	May 20
76	Fall Kill	28663	427.8	930	13.9	29593	441.7	March 15	May 20
67	Hunters Brook	348	69.6	12	2.4	360	72	April 11	April 15
61	Quassaick Creek	63909	1065.2	309	5.2	64218	1070.3	March 11	May 9
53	Indian Brook	202	4.5	53	1.2	255	5.7	March 21	May 4
38	Furnace Brook	3908	65.1	14	0.2	3922	65.4	March 1	April 29
37	Minisceongo Creek	1512	25.2	63	1.1	1575	26.3	March 11	May 9
NY Harbor	Richmond Creek	6140	84.1	4	0.1	6144	84.2	Feb 27	May 13
2016 Total		142770		2383		145153			
2016 Average			211.5		3.6		215.1		

Table 10. Results for all citizen science sampling sites in 2016, including total numbers of eels caught, and eels caught per day as a catch per unit effort (CPUE). In this study, eels are separated into two age classes: YOY glass eels and elvers. “Glass eels” are defined as eels that are just entering the Hudson River system in the spring of the sampling year (which includes recently pigmented eels at the end of the season), and “elvers” are fully pigmented eels that have been in the Hudson River system for at least a year.

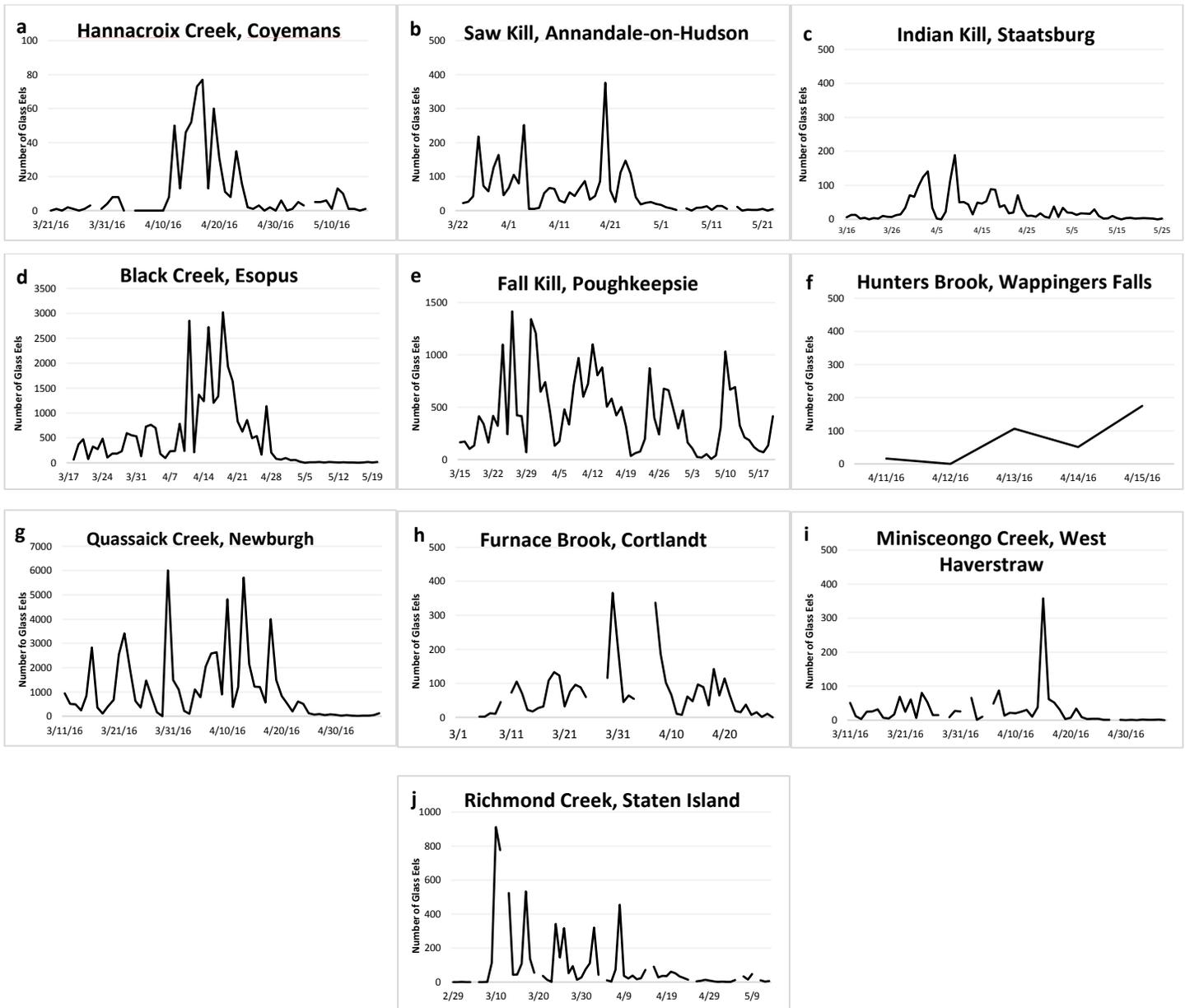


Figure 9. Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2016. a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-on-Hudson c) Indian Kill in Staatsburg. d) Black Creek in Esopus, e) Fall Kill in Poughkeepsie, f) Hunters Brook in Wappingers Falls, g) Quassaick Creek in Newburgh, h) Indian Brook in Cold Spring, i) Furnace Brook in Croton-on-Hudson, j) Minisceongo Creek in West Haverstraw, k) Richmond Creek in Staten Island. . **Note:** Each graph has a different scale.

Glass eel monitoring at Center for Urban River at Beczak (CURB): a unique site

Since 2015 the Center for the Urban River at Beczak (CURB) located in Yonkers (RM 14) has been involved with the eel monitoring program. CURB is a unique site among other sites in the Hudson Valley, the fyke net is situated in a constructed wetland, not a tidal tributary. The sampling gear and technique are similar with a few differences. In 2016 the fyke net at Beczak did not have wings to accommodate the narrow channel. Sampling days occur Tuesday through Friday and the net is left open Saturday through Sunday, and closed again on Monday.

Check out the link below for detailed graphs, observations and catch data from glass eel monitoring at CURB:

<http://www.centerfortheurbanriver.org/research/eels.html>



Jason and Rachel checking the fyke net in the constructed wetland at Beczak.



Mitigating Barriers to Migration

In 2011, a newly designed low-cost eel ladder (approximately \$400 in materials) was installed at Furnace Brook in Westchester County to help eels access habitat upstream of an approximately 6 meter high dam. In 2012, the same design was installed at Crum Elbow Creek and Saw Kill in Dutchess County. Electroshocking surveys show that the number of eels upstream of the dam is an order of magnitude lower than the number of eels directly downstream of the dam.

The ladder is made of a PVC tube (8 inch diameter) with one end in the stream and the other end landing in a bucket. Eels climb up netting in the tube to land in the bucket and are counted by volunteers before being transported upstream. There are two siphons that bring water from upstream of the dam to the ladder to ensure flow down the PVC tube, and to provide eels with the scent of upstream waters. From the end of May to the end of October, volunteers and scientists check the bucket twice a week for eels. All eels caught are separated into size classes: stage one (<3 inches), stage two (3-6 inches), stage three (6-12 inches), and stage four (>12 inches). The majority of eels that used all ladders were 3-6 inches long. Eels were not anesthetized and measured, but the size class of each eel was estimated to get a general understanding of what sizes used the ladder. All eels were then released above one or more barriers to their migration upstream.

2011 Results

Site	Stage 1 <3 inches	Stage 2 3-6 inches	Stage 3 6-12 inches	Stage 4 >12 inches	Total Eels
Furnace Brook	323	967	168	13	1461

2012 Results

Site	Stage 1 <3 inches	Stage 2 3-6 inches	Stage 3 6-12 inches	Stage 4 >12 inches	Total Eels
Saw Kill	1	37	1	0	39
Crum Elbow	3	73	3	1	80
Furnace Brook	61	207	41	0	308

2014 Results

Site	Stage 1 <3 inches	Stage 2 3-6 inches	Stage 3 6-12 inches	Stage 4 >12 inches	Total Eels
Saw Kill	0	0	23	173	196
Crum Elbow	1	135	24	4	163
Furnace Brook	47	37	0	1	85

2015 Results

Site	Stage 1 <3 inches	Stage 2 3-6 inches	Stage 3 6-12 inches	Stage 4 >12 inches	Total Eels
Saw Kill	5	32	22	14	73
Crum Elbow	1	78	13	0	92
Furnace Brook	43	109	13	7	166



Low-cost eel ladder at Furnace Brook, Westchester County

Eel Project Partners by Site

Hannacroix Creek, Coeymans

New Baltimore Conservancy
Cornell Cooperative Extension of Greene County
Coxsackie Elementary School
Coxsackie-Athens High School

Saw Kill, Annandale-on-Hudson

Bard College

Black Creek, Esopus

Scenic Hudson
Kingston High School
New Paltz High School
SUNY New Paltz

Fall Kill, Poughkeepsie

Poughkeepsie High School
Arlington High School
Mid-Hudson Children's Museum
Marist College
Poughkeepsie Day School
John Jay High School
Wappingers Junior High School
Local homeschools

Indian Kill, Staatsburg

Duchess Community College
Marist College
NY State Parks Recreation and Historic Preservation
Dave Lindemann

Quassaick Creek, Newburgh

Mt. St. Mary's College
Quassaick Creek Watershed Alliance
Newburg Free Academy
Marlboro Middle School

Indian Brook, Cold Spring

National Audubon at Constitution Marsh

Furnace Brook, Cortlandt

Ossining High School
Teatown Lake Reservation
Westchester Community College

Minisceongo Creek, West Haverstraw

Rockland County Division of Environmental Resources
Strawtown Arts Studio
NRG Bowline Plant
Lamont Doherty Earth Observatory
Haverstraw Community Center

Richmond Creek, Staten Island

New York City Department of Environmental Protection
St. Clare's School
NY Harbor School
Boy Scouts of America
NYS DEC Region 2

