# THE HUDSON RIVER EEL PROJECT 2008-2020

## Citizen Science American Eel Surveys

### Overview

The New York State Department of Environmental Conservation (NYSDEC) Hudson River Estuary Program and National Estuarine Research Reserve support a citizen science eel monitoring program to observe the number of young of year (YOY) 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 | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE Total Eels Caught |
|---|---|---|---|---|---|---|---|
| **2008** | 144 | 2,388 | 16.6 | 181 | 1.3 | 2,569 | 17.8 |
| **2009** | 273 | 9,089 | 33.3 | 431 | 1.6 | 9,520 | 34.9 |
| **2010** | 432 | 10,975 | 25.4 | 1,407 | 3.3 | 12,382 | 28.7 |
| **2011** | 444 | 7,628 | 17.2 | 1,457 | 3.4 | 9,085 | 20.5 |
| **2012** | 645 | 85,297 | 132.2 | 1,331 | 2.1 | 86,628 | 134.3 |
| **2013** | 626 | 103,193 | 164.8 | 1,652 | 2.6 | 104,845 | 167.5 |
| **2014** | 529 | 49,758 | 94.1 | 873 | 1.7 | 50,631 | 95.7 |
| **2015** | 491 | 48,538 | 98.9 | 1,298 | 2.6 | 49,836 | 101.5 |
| **2016** | 628 | 141,770 | 225.7 | 2,383 | 3.8 | 144,153 | 229.5 |
| **2017** | 701 | 87,905 | 125.4 | 3,173 | 4.5 | 91,078 | 129.9 |
| **2018** | 785 | 144,986 | 184.7 | 1,276 | 1.6 | 146,254 | 184.5 |
| **2019** | 658 | 238,376 | 366.5 | 5,745 | 8.7 | 246,900 | 375.2 |
| **2020** | 370 | 405,019 | 504.1 | 2,903 | 3.5 | 407,922 | 507.6 |
| **Total** | **6,726** | **1,334,922** | | **24,110** | | **1,361,803** | |
| **CPUE** | | | **198.5** | | **3.6** | | **202.5** |

**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.

### CONTACT INFORMATION

**Sarah Mount**
Science Educator, Hudson River National Estuarine Research Reserve/NEIWPCC
**New York State Department of Environmental Conservation**
Norrie Point Environmental Center
256 Norrie Point Way
Staatsburg, NY 12508 | sarah.mount@dec.ny.gov

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2019 Fallkill Eel-ebration in Poughkeepsie

## Methods

Sampling protocols follow those outlined by the Atlantic States Marine Fisheries Commission (ASMFC)[1] and on previous Hudson River research following ASMFC protocols[2].

### Sampling Sites

Sampled streams are all tributaries to the Hudson River estuary in New York except the Bronx River, Richmond Creek and Blind Brook. 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 | Town/City | County | Years of Sampling |
|---|---|---|---|---|
| 153 | Poestenkill | Troy | Rensselear | 2018-2019 |
| 132 | Hannacroix Creek | Coeymans | Greene | 2010-2020 |
| 98 | Saw Kill | Annandale-on-Hudson | Dutchess | 2003-2020 |
| 85 | Enderkill | Staatsburg | Dutchess | 2016-2020 |
| 84 | Black Creek | Esopus | Ulster | 2010-2020 |
| 82 | Crum Elbow Creek | Hyde Park | Dutchess | 2009-2015 |
| 76 | Fall Kill | Poughkeepsie | Dutchess | 2008-2020 |
| 67 | Hunters Brook | Wappingers Falls | Dutchess | 2016-2019 |
| 61 | Quassaick Creek | Newburgh | Orange | 2012-2019 |
| 53 | Indian Brook | Cold Spring | Putnam | 2009-2019 |
| 38 | Furnace Brook | Cortlandt | Westchester | 2008-2020 |
| 37 | Minisceongo Creek | West Haverstraw | Rockland | 2009-2020 |
| Long Island Sound | Blind Brook | Rye | Westchester | 2017-2019 |
| ER | Bronx River | Bronx | Bronx | 2012-2013 |
| NY Harbor | Richmond Creek | Staten Island | Richmond | 2012-2020 |

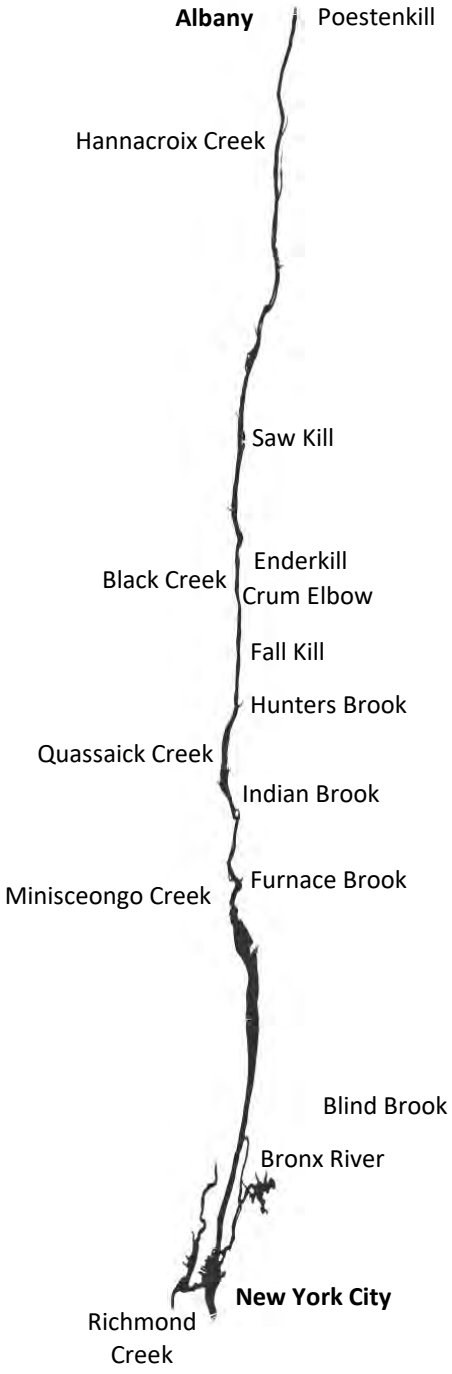


**Table 2.** Sample streams with their location (New York State county and town/city), the number of sampling years, and Hudson River Mile (RM) measured from the southern tip of Manhattan (RM 0). Exceptions include the Bronx River, a tributary of the East River, Richmond Creek, part of New York Harbor and Blind Brook, a tributary of the Long Island Sound. The Saw Kill site has been active each spring since before this citizen-science project[2].

[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 February 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 may 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.

## 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.

## 2008 Results

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 98 | Saw Kill | 55 | 29 | 0.5 | 27 | 1.0 | 56 | 2.0 | 18-Mar | 11-May |
| 76 | Fall Kill | 57 | 1,228 | 21.5 | 154 | 2.7 | 1,382 | 24.3 | 13-Apr | 31-May |
| 38 | Furnace Brook | 32 | 1,131 | 35.3 | ---- | ---- | 1,131 | 36.5 | 19-Apr | 31-May |
| **Total** | | **144** | **2,388** | | **181** | | **2,569** | | | |
| **CPUE** | | | | **16.6** | | **1.3** | | **17.8** | | |

**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.

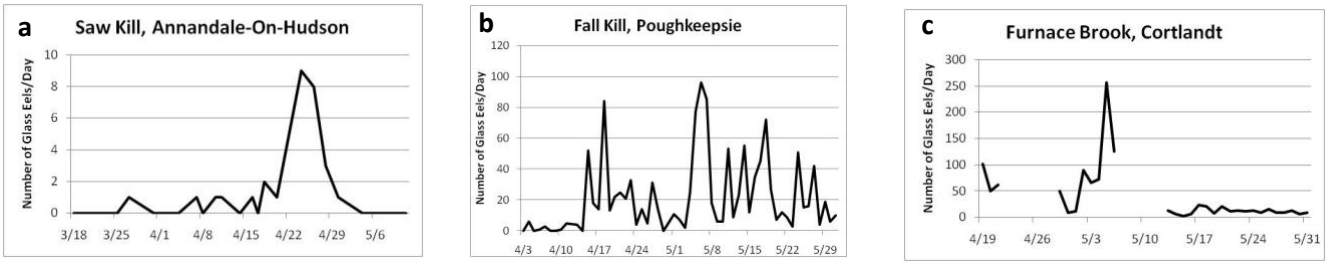


**Figure 1.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2008, a) Saw Kill in Annandale-on-Hudson, b) Fall Kill in Poughkeepsie, c) Furnace Brook in Cortlandt. **Note:** Each graph has a different scale.

## 2009 Results

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 98 | Saw Kill | 25 | 239 | 9.56 | 45 | 1.8 | 284 | 11.4 | 11-Apr | 17-May |
| 82 | Crum Elbow Creek | 56 | 370 | 6.6 | 83 | 1.5 | 453 | 8.1 | 28-Mar | 28-May |
| 76 | Fall Kill | 63 | 4506 | 71.5 | 124 | 1.97 | 4630 | 73.49 | 30-Mar | 1-Jun |
| 53 | Indian Brook | 61 | 74 | 1.2 | 120 | 2 | 194 | 3.2 | 25-Mar | 25-May |
| 38 | Furnace Brook | 63 | 3446 | 54.7 | 46 | 0.7 | 3492 | 55.4 | 25-Mar | 26-May |
| 37 | Minisceongo Creek | 5 | 454 | 90.8 | 13 | 2.6 | 467 | 93.4 | 25-Apr | 29-Apr |
| **Total** | | **273** | **9,089** | | **431** | | **9,520** | | | |
| **CPUE** | | | | **33.3** | | **1.6** | | **34.9** | | |

**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.

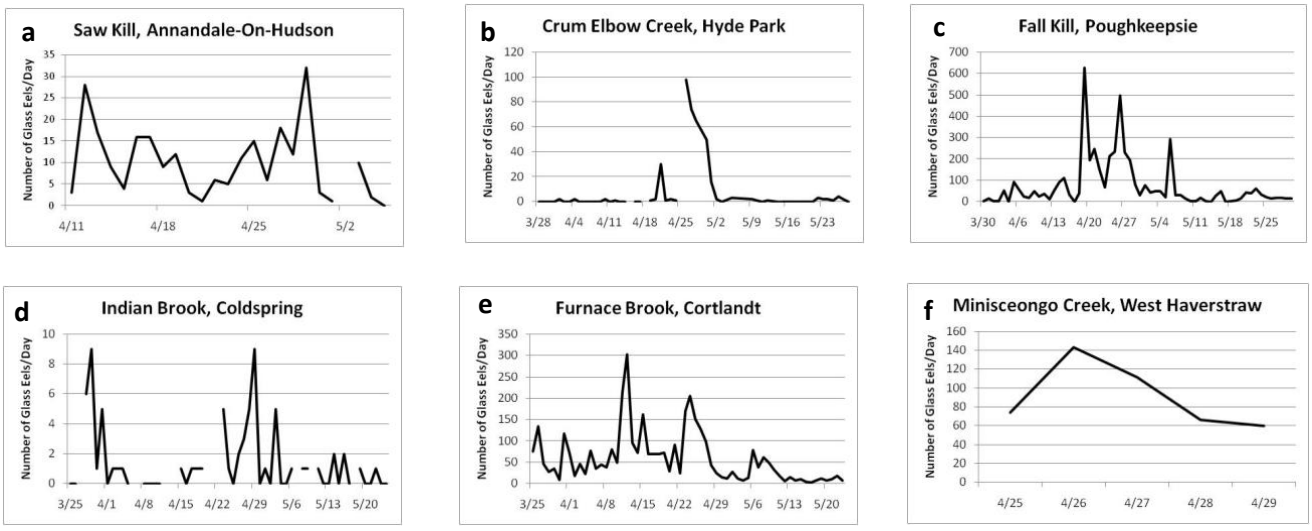


**Figure 2.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2009, a) Saw Kill in Annandale-On-Hudson, b) Crum Elbow Creek in Hyde Park, c) Fall Kill in Poughkeepsie, d) Indian Brook in Cold Spring, e) Furnace Brook in Cortlandt, f) Minisceongo Creek in West Haverstraw. **Note:**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

## 2010 Results

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 132 | Hannacroix Creek | 36 | 358 | 9.94 | 279 | 7.75 | 637 | 17.69 | 13-Apr | 18-May |
| 98 | Saw Kill | 35 | 120 | 3.43 | 27 | 0.77 | 147 | 4.20 | 11-Apr | 18-May |
| 84 | Black Creek | 89 | 3934 | 44.20 | 248 | 2.79 | 4182 | 46.99 | 1-Apr | 1-Jun |
| 82 | Crum Elbow Creek | 74 | 1199 | 16.20 | 486 | 6.57 | 1685 | 22.77 | 6-Apr | 25-May |
| 76 | Fall Kill | 57 | 2032 | 35.65 | 265 | 4.65 | 2297 | 40.30 | 6-Apr | 1-Jun |
| 53 | Indian Brook | 42 | 22 | 0.52 | 53 | 1.26 | 75 | 1.79 | 8-Apr | 19-May |
| 38 | Furnace Brook | 50 | 2863 | 57.26 | 18 | 0.36 | 2881 | 57.62 | 26-Mar | 20-May |
| 37 | Minisceongo Creek | 49 | 447 | 9.12 | 31 | 0.63 | 478 | 9.76 | 26-Mar | 23-May |
| **Total** | | **432** | **10,975** | | **1,407** | | **12,382** | | | |
| **CPUE** | | | | **25.4** | | **3.3** | | **28.7** | | |

**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.

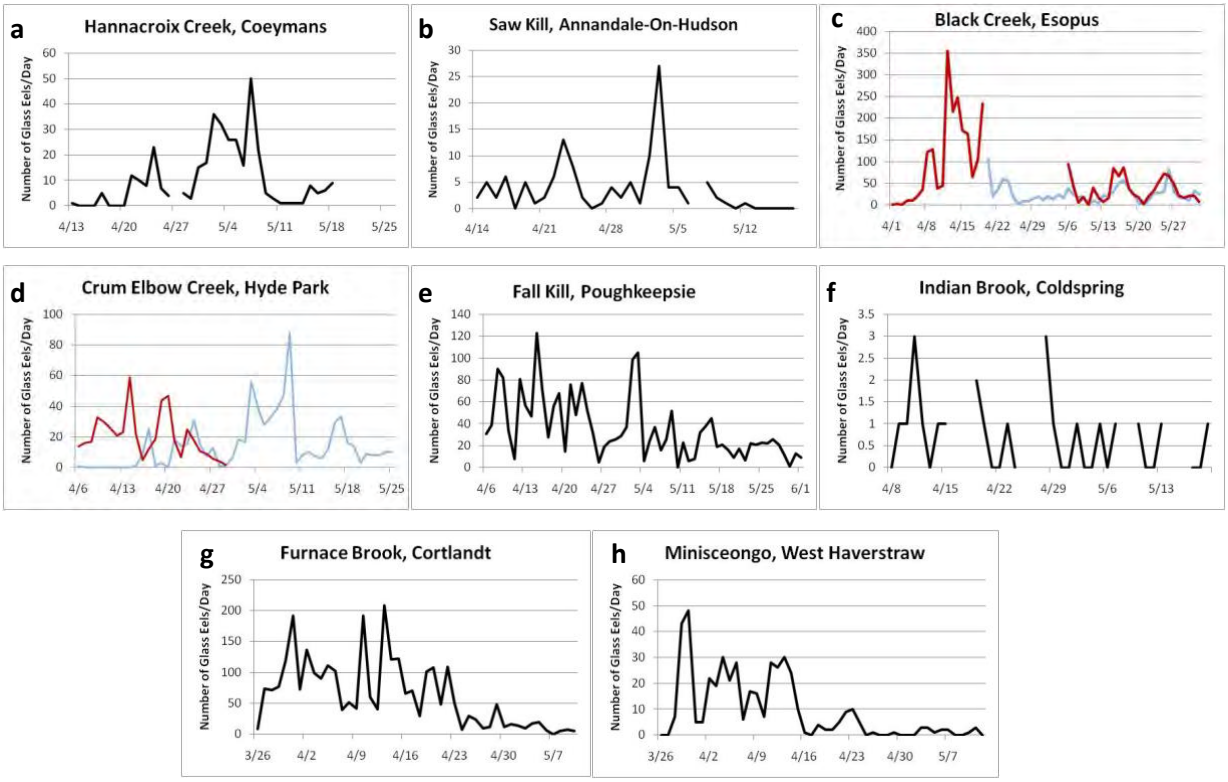


**Figure 3.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2010, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Indian Brook in Cold Spring, g) Furnace Brook in 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.

## 2011 Results

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 132 | Hannacroix Creek | 25 | 648 | 25.9 | 255 | 10.2 | 903 | 36.1 | 2-May | 3-Jun |
| 98 | Saw Kill | 71 | 116 | 1.6 | 9 | 0.1 | 125 | 1.8 | 27-Mar | 5-Jun |
| 84 | Black Creek | 68 | 1002 | 14.7 | 163 | 2.4 | 1165 | 17.1 | 27-Mar | 2-Jun |
| 82 | Crum Elbow Creek | 77 | 2079 | 27.0 | 673 | 8.7 | 2752 | 35.7 | 28-Mar | 17-Jun |
| 76 | Fall Kill | 66 | 625 | 9.5 | 218 | 3.3 | 843 | 12.8 | 25-Mar | 1-Jun |
| 53 | Indian Brook | 23 | 38 | 4.2 | 39 | 4.3 | 77 | 8.6 | 31-Mar | 22-Apr |
| 38 | Furnace Brook | 53 | 2508 | 47.3 | 10 | 0.2 | 2518 | 47.5 | 26-Mar | 28-May |
| 37 | Minisceongo Creek | 61 | 612 | 10.0 | 90 | 1.5 | 702 | 11.5 | 27-Mar | 1-Jun |
| **Total** | | **444** | **7,628** | | **1,457** | | **9,085** | | | |
| **CPUE** | | | | **17.2** | | **3.3** | | **20.5** | | |

**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.

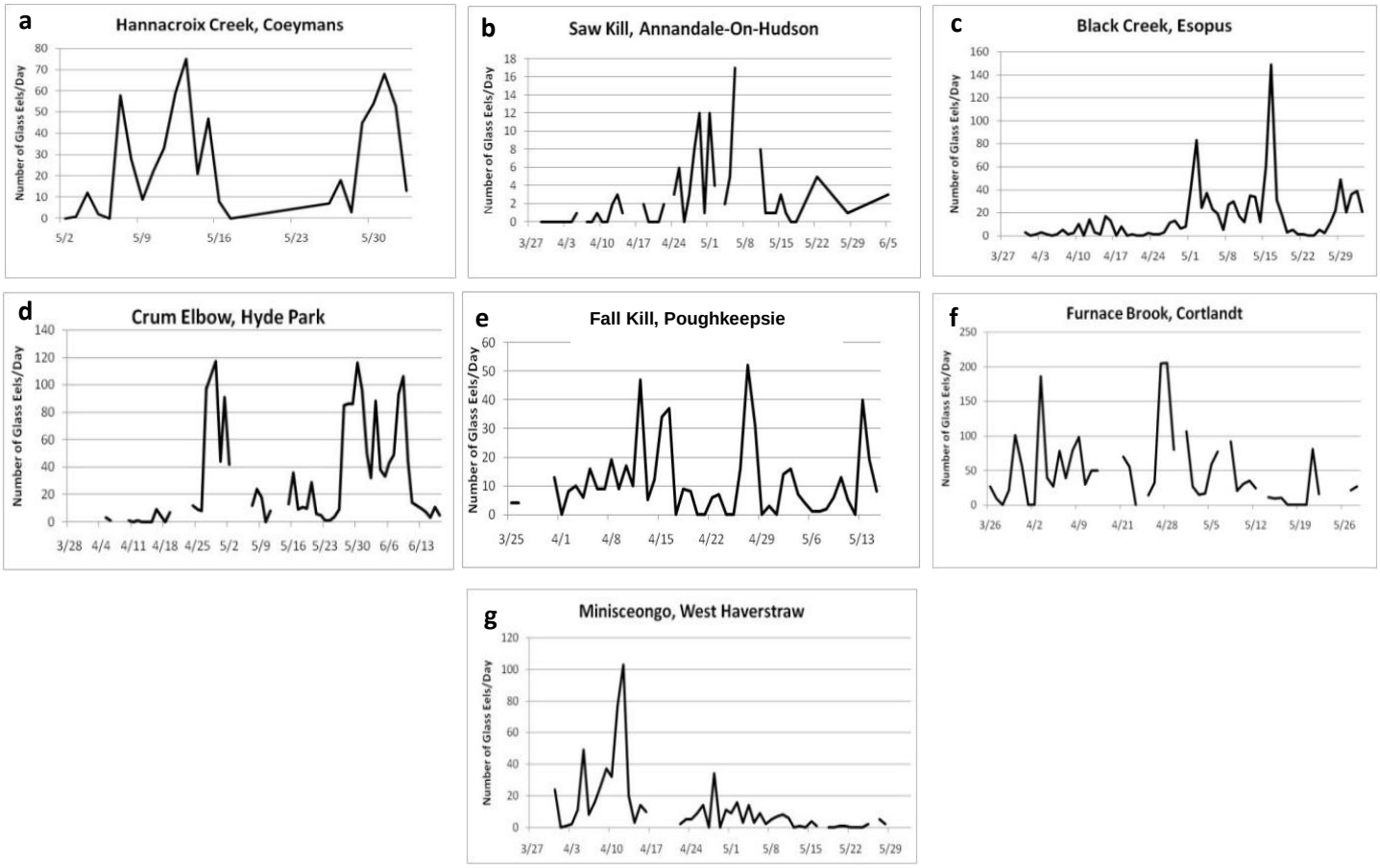


**Figure 4.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2011, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum, Elbow in Hyde Park, e) Fall Kill in Poughkeepsie f) Furnace Brook in Cortlandt and g) Minisceongo in West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

## 2012 Results

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 132 | Hannacroix Creek | 50 | 2945 | 58.9 | 37 | 0.7 | 2982 | 59.6 | 24-Mar | 14-May |
| 98 | Saw Kill | 44 | 139 | 3.2 | 15 | 0.3 | 154 | 3.5 | 18-Mar | 30-Apr |
| 84 | Black Creek | 61 | 12408 | 203.4 | 101 | 1.7 | 12509 | 205.1 | 13-Mar | 14-May |
| 82 | Crum Elbow Creek | 76 | 22460 | 295.5 | 732 | 9.6 | 23192 | 305.2 | 13-Mar | 30-May |
| 76 | Fall Kill | 65 | 6831 | 105.1 | 198 | 3.0 | 7029 | 108.1 | 7-Mar | 11-May |
| 61 | Quassaick Creek | 53 | 23446 | 442.4 | 123 | 2.3 | 23569 | 444.7 | 20-Mar | 11-May |
| 53 | Indian Brook | 67 | 73 | 1.1 | 67 | 1.0 | 140 | 2.1 | 9-Mar | 14-May |
| 38 | Furnace Brook | 76 | 3796 | 49.9 | 23 | 0.3 | 3819 | 50.3 | 4-Mar | 19-May |
| 37 | Minisceongo Creek | 60 | 939 | 15.7 | 22 | 0.4 | 961 | 16.0 | 6-Mar | 4-May |
| NY Harbor | Richmond Creek | 56 | 12037 | 214.9 | 7 | 0.1 | 12044 | 215.1 | 29-Mar | 11-May |
| ER | Bronx River | 37 | 223 | 2.7 | 6 | 0.1 | 229 | 2.8 | 6-Mar | 30-Apr |
| **Total** | | **645** | **85,297** | | **1,331** | | **86,628** | | | |
| **CPUE** | | | | **132.2** | | **2.1** | | **134.3** | | |

**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.

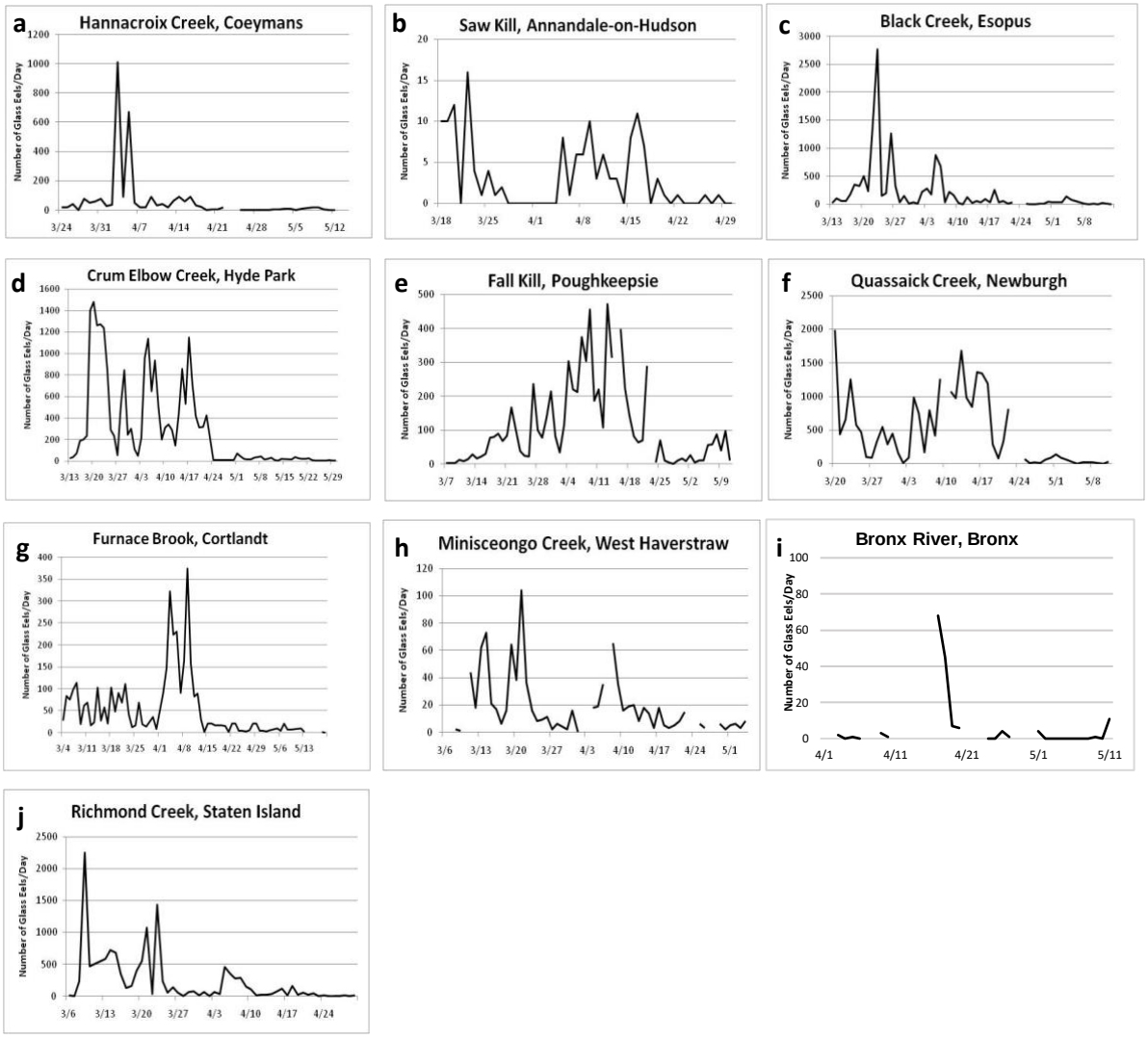


**Figure 5.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2012, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-On-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Quassaick Creek in Newburgh, g) Furnace Brook in 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.

## 2013 Results

| RM | Site | Effort (days) | 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 | 47 | 42912 | 913.0 | 379 | 8.1 | 43291 | 921.1 | 5-Apr | 21-May |
| 98 | Saw Kill | 49 | 1819 | 37.1 | 80 | 1.6 | 1899 | 38.8 | 3-Apr | 21-May |
| 84 | Black Creek | 59 | 19254 | 326.3 | 105 | 1.8 | 19359 | 328.1 | 23-Mar | 20-May |
| 82 | Crum Elbow Creek | 62 | 11565 | 186.5 | 729 | 11.8 | 12294 | 198.3 | 30-Mar | 24-May |
| 76 | Fall Kill | 59 | 7081 | 120.0 | 178 | 3.0 | 7259 | 123.0 | 27-Mar | 24-May |
| 61 | Quassaick Creek | 29 | 11619 | 400.7 | 46 | 1.6 | 11665 | 402.2 | 9-Apr | 7-May |
| 53 | Indian Brook | 51 | 100 | 2.0 | 61 | 1.2 | 161 | 3.2 | 25-Mar | 14-May |
| 38 | Furnace Brook | 87 | 2595 | 29.8 | 15 | 0.2 | 2610 | 30.0 | 11-Mar | 15-May |
| 37 | Minisceongo | 62 | 1448 | 23.4 | 31 | 0.5 | 1479 | 23.9 | 11-Mar | 15-May |
| ER | Bronx River | 64 | 371 | 5.8 | 12 | 0.2 | 383 | 6.0 | 14-Mar | 16-May |
| NY Harbor | Richmond Creek | 57 | 4429 | 77.7 | 16 | 0.3 | 4445 | 78.0 | 5-Mar | 30-Apr |
| **Total** | | **626** | **103,193** | | **1,652** | | **104,845** | | | |
| **CPUE** | | | | **164.8** | | **2.6** | | **167.5** | | |

**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.

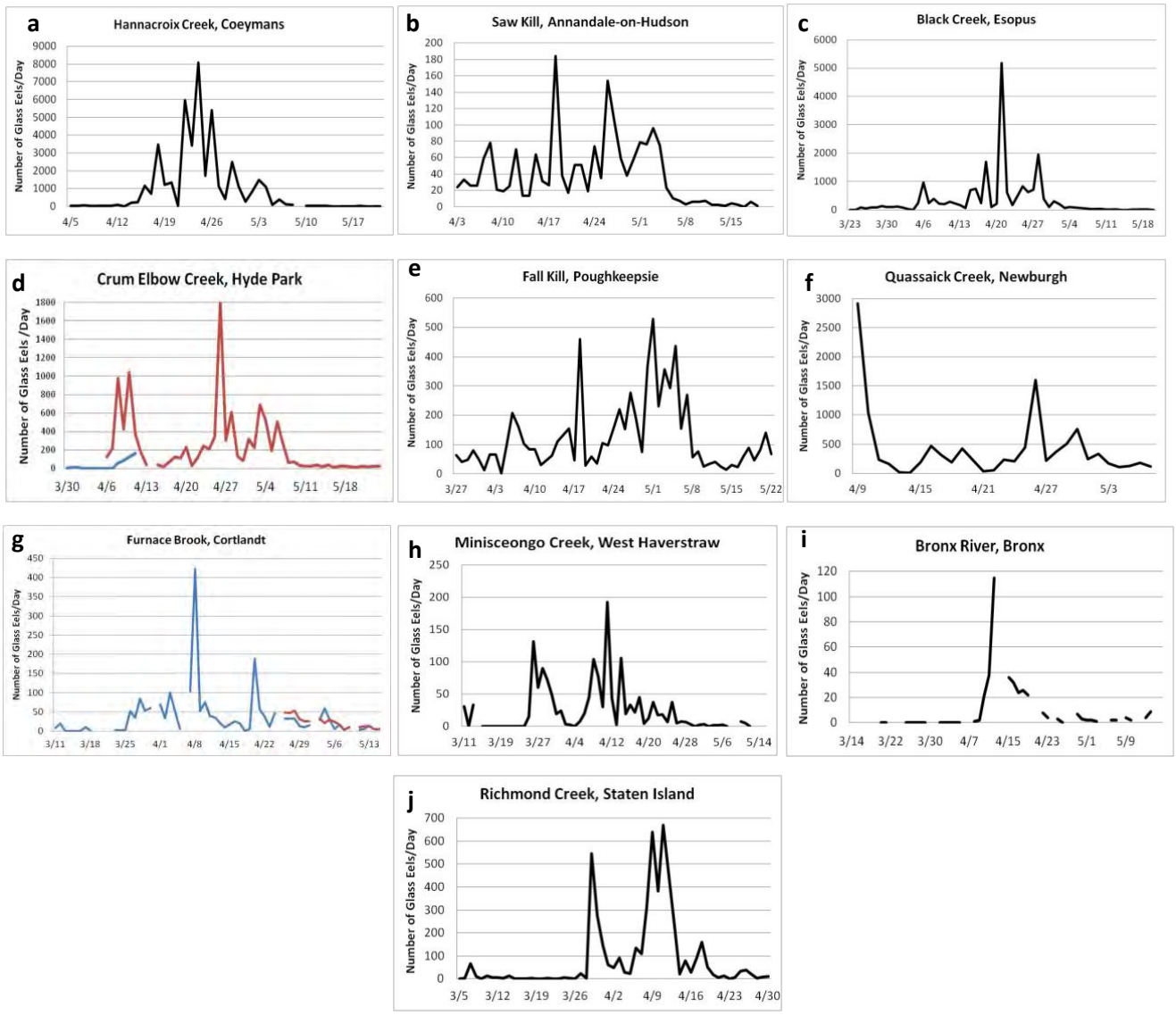


**Figure 6.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2013, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-on-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Quassaick Creek in Newburgh g) Furnace Brook in 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 | Effort (days) | 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 | 50 | 5499 | 110.0 | 189 | 3.8 | 5688 | 113.8 | 14-Apr | 3-Jun |
| 98 | Saw Kill | 45 | 494 | 11.0 | 55 | 1.2 | 549 | 12.2 | 9-Apr | 23-May |
| 84 | Black Creek | 56 | 3981 | 71.1 | 50 | 0.9 | 4031 | 72.0 | 28-Mar | 27-May |
| 82 | Crum Elbow Creek | 45 | 3428 | 76.2 | 105 | 2.3 | 3533 | 78.5 | 8-Apr | 23-May |
| 76 | Fall Kill | 60 | 18063 | 301.1 | 315 | 5.3 | 18378 | 306.3 | 27-Mar | 30-May |
| 61 | Quassaick Creek | 21 | 8020 | 381.9 | 33 | 1.6 | 8053 | 383.5 | 22-Apr | 12-May |
| 53 | Indian Brook | 50 | 42 | 0.8 | 28 | 0.6 | 70 | 1.4 | 28-Mar | 16-May |
| 38 | Furnace Brook | 63 | 2701 | 42.9 | 8 | 0.1 | 2709 | 43.0 | 25-Mar | 2-Jun |
| 37 | Minisceongo Creek | 69 | 1542 | 22.3 | 63 | 0.9 | 1605 | 23.3 | 24-Mar | 1-Jun |
| NY Harbor | Richmond Creek | 70 | 5988 | 85.5 | 27 | 0.4 | 6015 | 85.9 | 6-Mar | 16-May |
| **Total** | | **529** | **49,758** | | **873** | | **50,631** | | | |
| **CPUE** | | | | **94.1** | | **1.7** | | **95.7** | | |

**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.

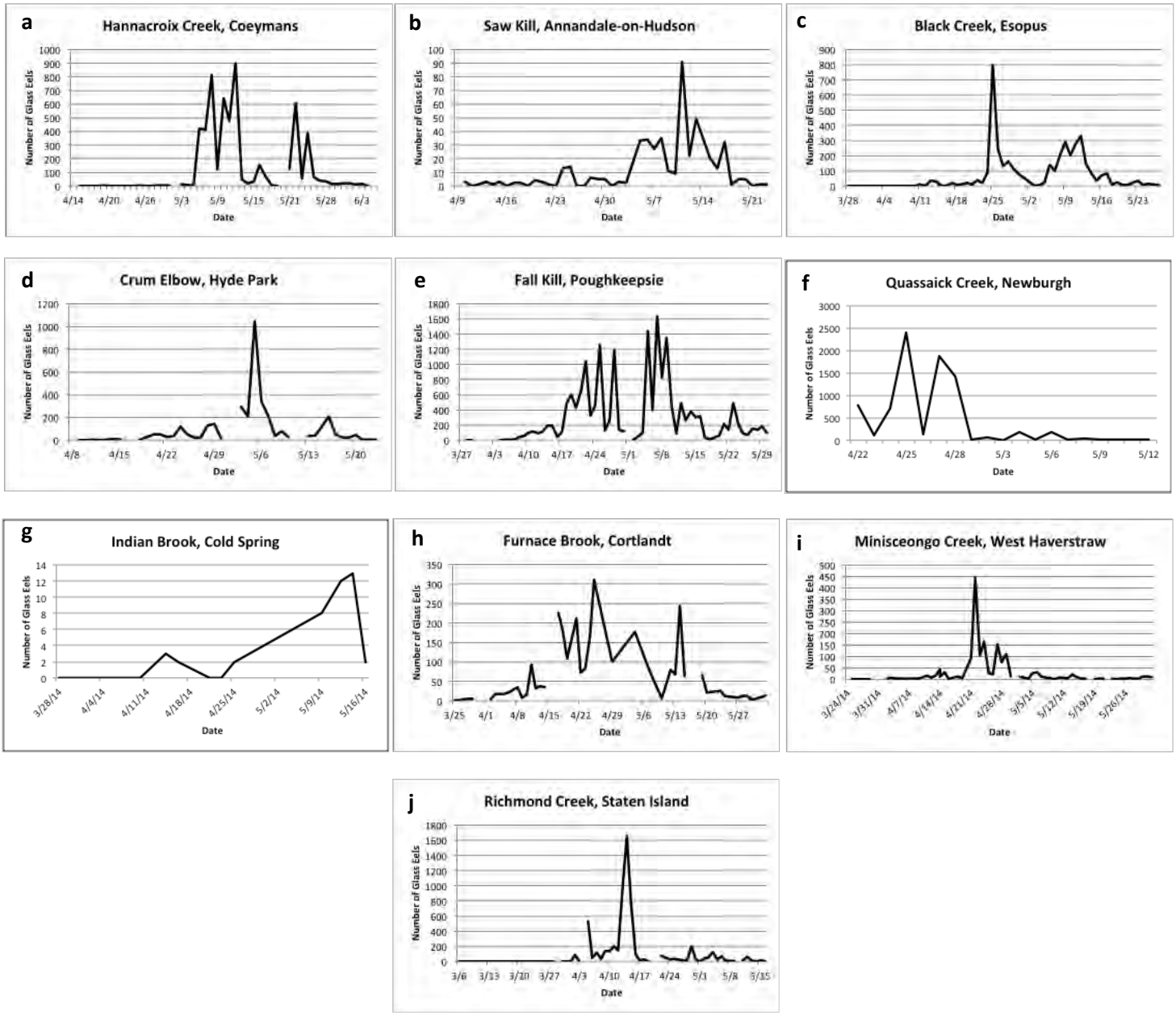


**Figure 7.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2014, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-on-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Quassaick Creek in Newburgh, g) Indian Brook in 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.

| RM | Site | Effort (days) | 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 | 35 | 180 | 5.1 | 194 | 5.5 | 374 | 10.7 | 25-Apr | 30-May |
| 98 | Saw Kill | 40 | 437 | 10.9 | 88 | 2.2 | 525 | 13.1 | 13-Apr | 22-May |
| 84 | Black Creek | 58 | 4061 | 70.0 | 248 | 4.3 | 4309 | 74.3 | 4-Apr | 1-Jun |
| 82 | Crum Elbow Creek | 8 | 119 | 14.9 | 25 | 3.1 | 144 | 18.0 | 11-Apr | 18-May |
| 76 | Fall Kill | 61 | 11250 | 184.4 | 326 | 5.3 | 11576 | 189.8 | 4-Apr | 3-Jun |
| 61 | Quassaick Creek | 36 | 21298 | 591.6 | 92 | 2.6 | 21390 | 594.2 | 15-Apr | 20-May |
| 53 | Indian Brook | 59 | 24 | 0.4 | 68 | 1.2 | 92 | 1.6 | 1-Apr | 29-May |
| 38 | Furnace Brook | 58 | 2542 | 43.8 | 48 | 0.8 | 2590 | 44.7 | 30-Mar | 27-May |
| 37 | Minisceongo Creek | 58 | 3832 | 66.1 | 197 | 3.4 | 4029 | 69.5 | 31-Mar | 27-May |
| NY Harbor | Richmond Creek | 78 | 4795 | 61.5 | 12 | 0.2 | 4807 | 61.6 | 10-Mar | 29-May |
| **Total** | | **491** | **48,538** | | **1,298** | | **49,836** | | | |
| **CPUE** | | | | **98.9** | | **2.6** | | **101.5** | | |

**Table 10.** 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.

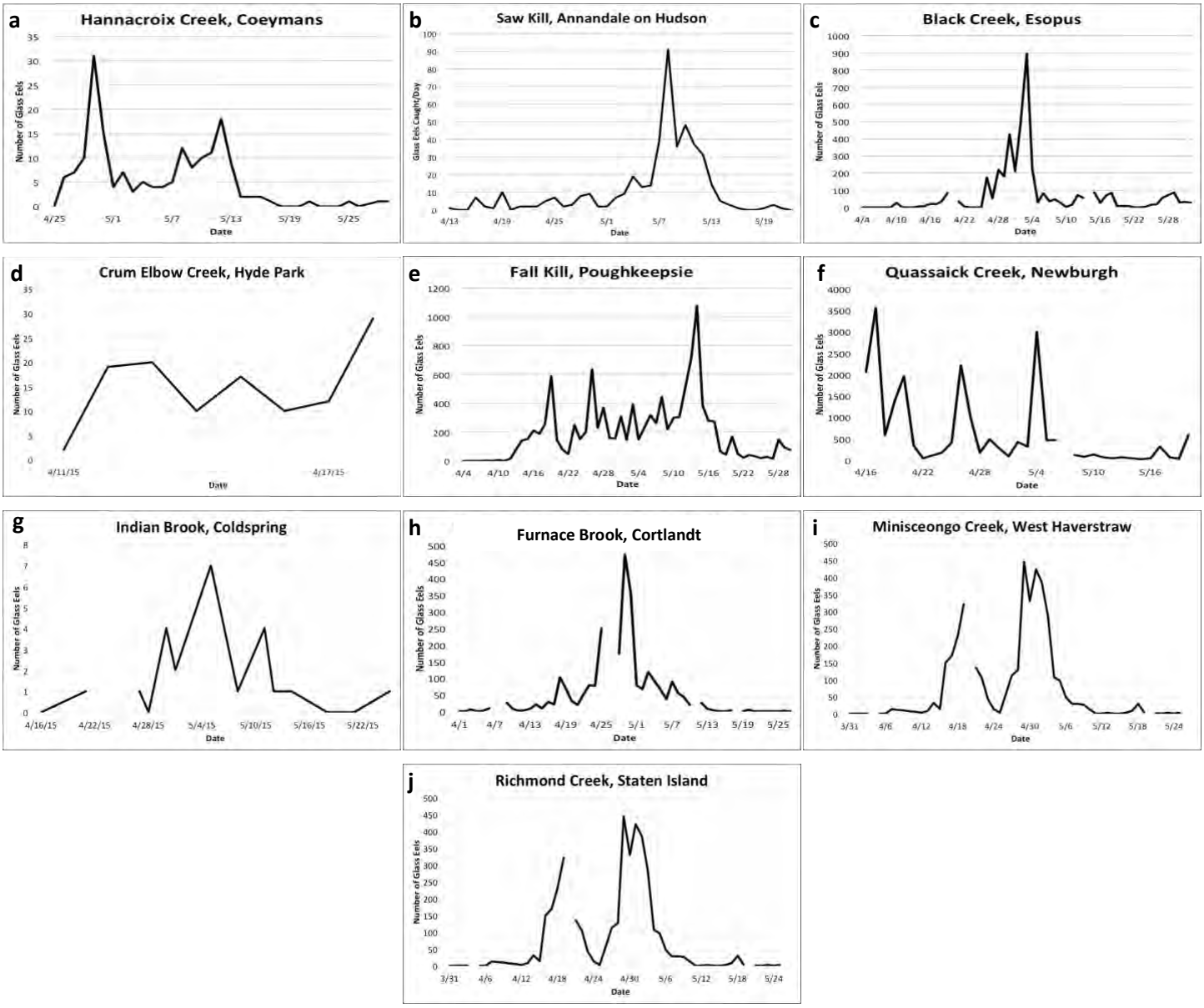


**Figure 8.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2015, a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-on-Hudson, c) Black Creek in Esopus, d) Crum Elbow Creek in Hyde Park, e) Fall Kill in Poughkeepsie, f) Quassaick Creek in Newburgh g) Indian Brook in 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 | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 132 | Hannacroix Creek | 58 | 588 | 10.1 | 119 | 2.1 | 707 | 12.2 | 21-Mar | 17-May |
| 98 | Saw Kill | 62 | 3034 | 48.9 | 134 | 2.2 | 3168 | 51.1 | 22-Mar | 23-May |
| 85 | Enderill | 71 | 2019 | 28.4 | 165 | 2.3 | 2184 | 30.8 | 16-Mar | 25-May |
| 84 | Black Creek | 65 | 31447 | 483.8 | 580 | 8.9 | 32027 | 492.7 | 17-Mar | 20-May |
| 76 | Fall Kill | 67 | 28663 | 427.8 | 930 | 13.9 | 29593 | 441.7 | 15-Mar | 20-May |
| 67 | Hunters Brook | 5 | 348 | 69.6 | 12 | 2.4 | 360 | 72.0 | 11-Apr | 15-Apr |
| 61 | Quassaick Creek | 60 | 63909 | 1065.2 | 309 | 5.2 | 64218 | 1070.3 | 11-Mar | 9-May |
| 53 | Indian Brook | 45 | 202 | 4.5 | 53 | 1.2 | 255 | 5.7 | 21-Mar | 4-May |
| 38 | Furnace Brook | 60 | 3908 | 65.1 | 14 | 0.2 | 3922 | 65.4 | 1-Mar | 29-Apr |
| 37 | Minisceongo Creek | 60 | 1512 | 25.2 | 63 | 1.1 | 1575 | 26.3 | 11-Mar | 9-May |
| NY Harbor | Richmond Creek | 75 | 6140 | 81.9 | 4 | 0.1 | 6144 | 81.9 | 27-Feb | 13-May |
| **Total** | | **628** | **141,770** | | **2,383** | | **144,153** | | | |
| **CPUE** | | | | **225.7** | | **3.8** | | **229.5** | | |

**Table 11.** 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.

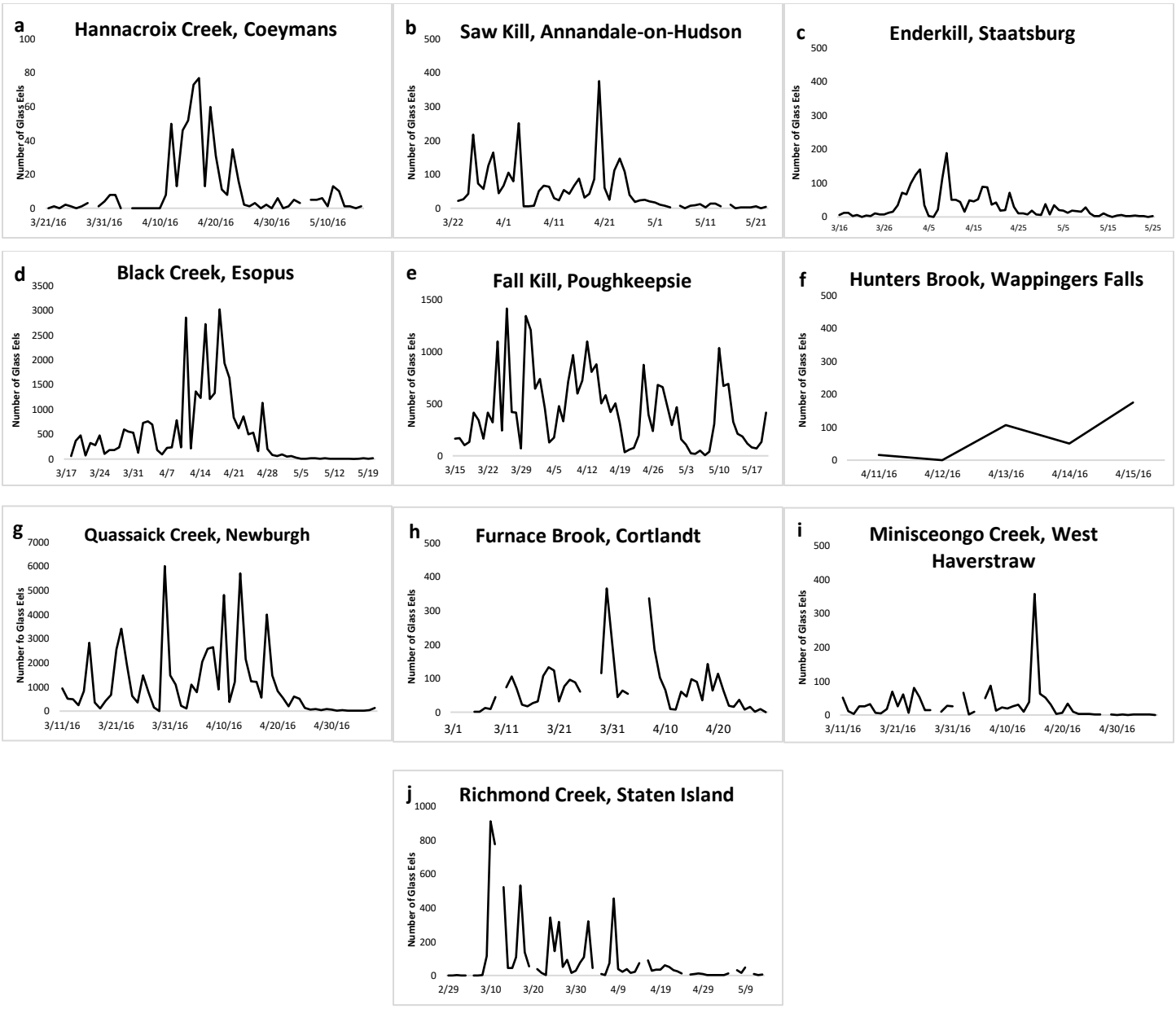


**Figure 9.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2016. a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-on-Hudson c) Enderkill in Staatsburg. d) Black Creek in Esopus, e) Fall Kill in Poughkeepsie, f) Hunters Brook in Wappingers Falls, g) Quassaick Creek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

## 2017 Results

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 132 | Hannacroix Creek | 59 | 16090 | 272.7 | 1606 | 27.2 | 17696 | 299.9 | 28-Mar | 30-May |
| 98 | Saw Kill | 55 | 1271 | 23.1 | 55 | 1.0 | 1326 | 24.1 | 28-Mar | 26-May |
| 85 | Enderkill | 67 | 1916 | 28.6 | 255 | 3.8 | 2171 | 32.4 | 7-Mar | 25-May |
| 84 | Black Creek | 63 | 31204 | 495.3 | 685 | 10.9 | 31889 | 506.2 | 9-Mar | 25-May |
| 76 | Fall Kill | 78 | 5719 | 73.3 | 79 | 1.0 | 5798 | 74.3 | 1-Mar | 31-May |
| 67 | Hunters Brook | 44 | 3727 | 84.7 | 356 | 8.1 | 4083 | 92.8 | 14-Apr | 27-May |
| 61 | Quassaick Creek | 35 | 15804 | 451.5 | 9 | 0.3 | 15813 | 451.8 | 6-Mar | 16-May |
| 53 | Indian Brook | 65 | 53 | 0.8 | 48 | 0.7 | 101 | 1.6 | 8-Mar | 11-May |
| 38 | Furnace Brook | 71 | 3896 | 54.9 | 23 | 0.3 | 3919 | 55.2 | 25-Feb | 19-May |
| Long Is. Sound | Blind Brook | 50 | 3660 | 73.2 | 1 | 0.0 | 3661 | 73.2 | 9-Mar | 23-May |
| 37 | Minisceongo Creek | 48 | 3689 | 76.9 | 56 | 1.2 | 3745 | 78.0 | 3-Mar | 4-May |
| NY Harbor | Richmond Creek | 59 | 876 | 14.8 | | | 876 | 14.8 | 27-Feb | 13-May |
| **Total** | | **701** | **87,905** | | **3,173** | | **91,078** | | | |
| **CPUE** | | | | **125.4** | | **4.5** | | **129.9** | | |

**Table 12.** Results for all citizen science sampling sites in 2017, 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.

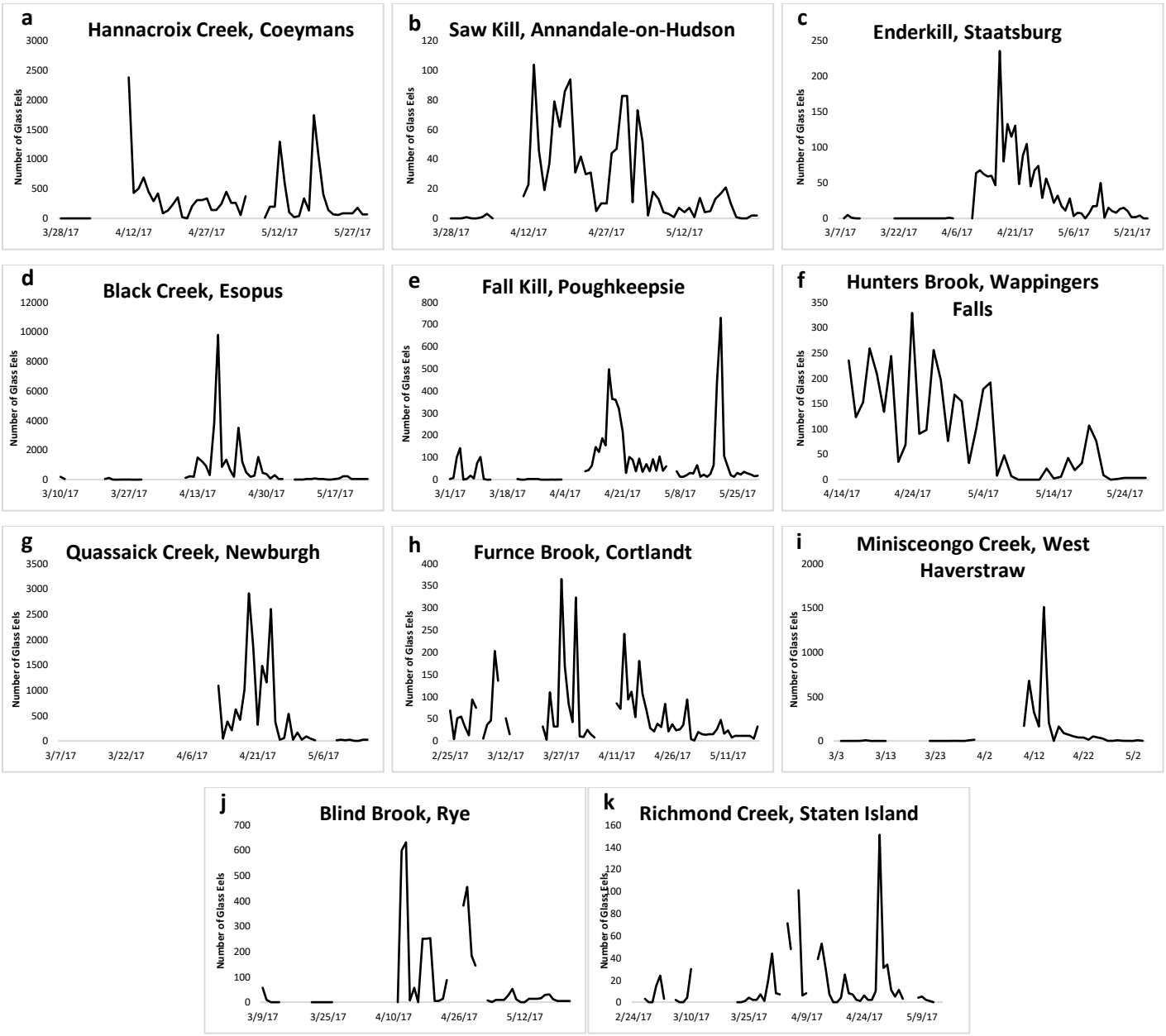


**Figure 10.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2017. a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-on-Hudson, c)Enderkill in Staatsburg, d) Black Creek in Esopus, e) Fall Kill in Poughkeepsie, f) Hunters Brook in Wappingers Falls, g) Quassaick Creek in Newburgh, h) Furnace Brook in Cortlandt, i) Minisceongo Creek in West Haverstraw, j) Blind Brook in Rye, k) Richmond Creek in Staten Island. **Note:** Each graph has a different scale

## 2018 Results

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 153 | Poestenkill | 8 | 1 | 0.1 | 9 | 1.1 | 10 | 1.3 | 18-Apr | 26-Apr |
| 132 | Hannacroix Creek | 58 | 29632 | 510.9 | 71 | 1.2 | 29703 | 512.1 | 4-Apr | 1-Jun |
| 98 | Saw Kill | 57 | 1454 | 25.5 | 61 | 1.1 | 1515 | 26.6 | 22-Mar | 18-May |
| 85 | Enderkill | 56 | 492 | 8.8 | 93 | 1.7 | 585 | 10.4 | 23-Mar | 18-May |
| 84 | Black Creek | 65 | 17503 | 269.3 | 218 | 3.4 | 17721 | 272.6 | 16-Mar | 22-May |
| 76 | Fall Kill | 65 | 7027 | 108.1 | 29 | 0.4 | 7056 | 108.6 | 13-Mar | 18-May |
| 67 | Hunters Brook | 51 | 5421 | 106.3 | 429 | 8.4 | 5850 | 114.7 | 2-Apr | 25-May |
| 61 | Quassaick Creek | 55 | 29418 | 534.9 | 16 | 0.3 | 29434 | 535.2 | 15-Mar | 14-May |
| 53 | Indian Brook | 48 | 85 | 1.8 | 44 | 0.9 | 129 | 2.7 | 3-Feb | 17-May |
| 38 | Furnace Brook | 73 | 4316 | 59.1 | 15 | 0.2 | 4331 | 59.3 | 24-Feb | 19-May |
| Long Is. Sound | Blind Brook | 62 | 2036 | 32.8 | 1 | 0.01 | 2037 | 32.9 | 16-Mar | 17-May |
| 37 | Minisceongo Creek | 58 | 46729 | 805.7 | 276 | 4.8 | 47005 | 810.4 | 5-Mar | 22-May |
| NY Harbor | Richmond Creek | 76 | 872 | 11.5 | 9 | 0.1 | 881 | 11.6 | 23-Feb | 16-May |
| **Total** | | **785** | **144,986** | | **1,268** | | **146,254** | | | |
| **CPUE** | | | | **184.7** | | **1.6** | | **186.3** | | |

**Table 13.** Results for all citizen science sampling sites in 2018, 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.

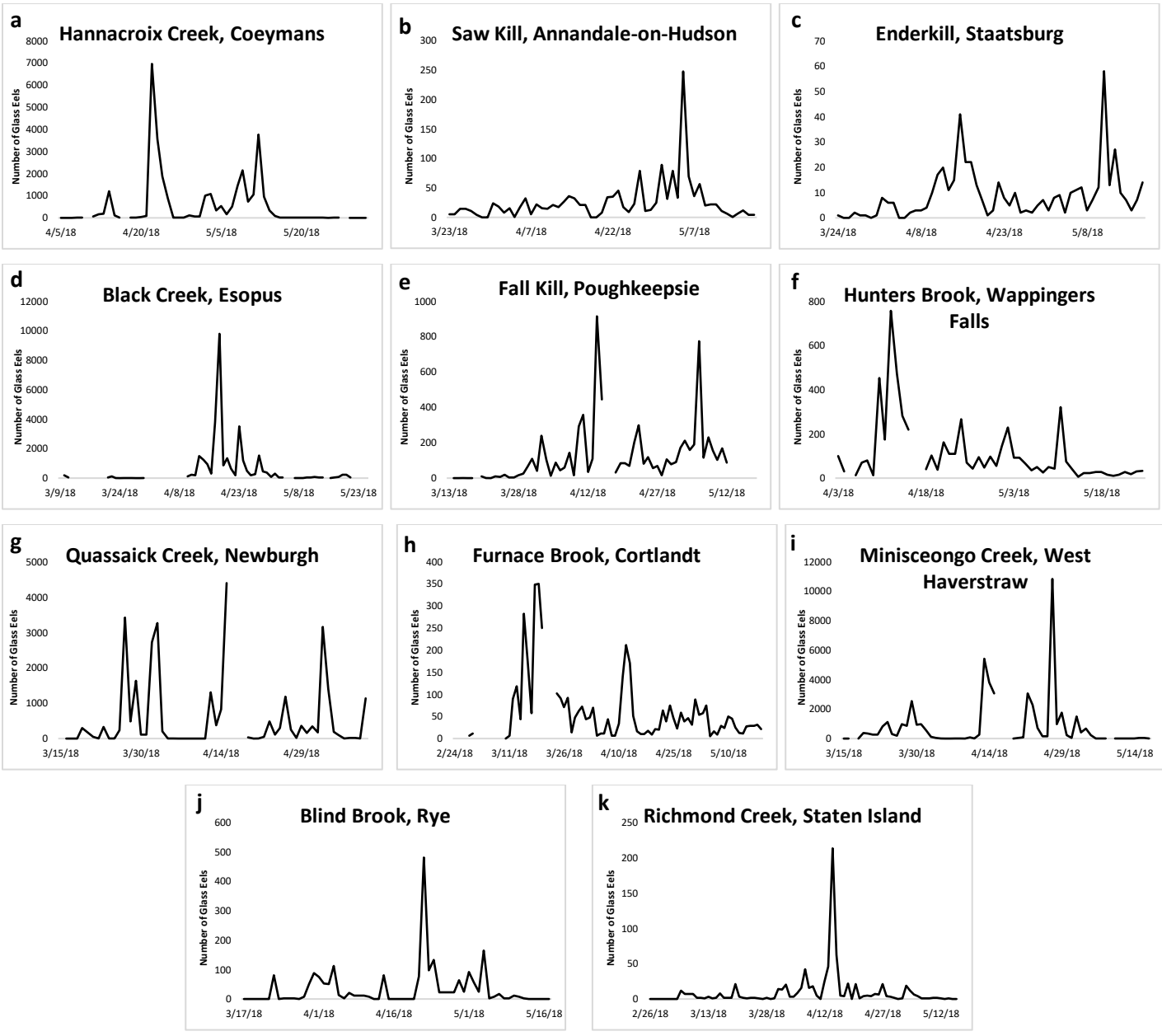


**Figure 11.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2018. a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-on-Hudson c) Enderkill in Staatsburg. d) Black Creek in Esopus, e) Fall Kill in Poughkeepsie, f) Hunters Brook in Wappingers Falls, g) Quassaick Creek in Newburgh, h) Furnace Brook in Cortlandt, i) Minisceongo Creek in West Haverstraw, j) Blind Brook in Rye k) Richmond Creek in Staten Island. **Note:** Each graph has a different scale.

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 153 | Poestenkill | 18 | 17 | 0.9 | 150 | 8.3 | 167 | 9.3 | 30-Apr | 24-May |
| 132 | Hannacroix Creek | 56 | 150259 | 2683.2 | 2621 | 46.8 | 152880 | 2730.0 | 4-Apr | 3-Jun |
| 98 | Saw Kill | 53 | 638 | 12.0 | 38 | 0.7 | 676 | 12.8 | 26-Mar | 23-May |
| 85 | Enderkill | 52 | 1957 | 37.6 | 213 | 4.1 | 2170 | 41.7 | 21-Mar | 24-May |
| 84 | Black Creek | 76 | 33631 | 442.5 | 629 | 8.3 | 34260 | 450.8 | 15-Mar | 4-Jun |
| 76 | Fall Kill | 71 | 19539 | 275.2 | 534 | 7.5 | 20073 | 282.7 | 11-Mar | 28-May |
| 67 | Hunters Brook | 54 | 9135 | 169.2 | 1352 | 25.0 | 10487 | 194.2 | 27-Mar | 23-May |
| 61 | Quassaick Creek | 59 | 13490 | 228.6 | 21 | 0.4 | 13511 | 229.0 | 14-Mar | 16-May |
| 53 | Indian Brook | 22 | 7 | 0.3 | 16 | 0.7 | 23 | 1.0 | 15-Mar | 17-May |
| 38 | Furnace Brook | 57 | 94 | 1.6 | 0 | 0 | 94 | 1.6 | 1-Mar | 15-May |
| Long Is. Sound | Blind Brook | 30 | 290 | 9.7 | 0 | 0 | 290 | 9.7 | 7-Mar | 23-Apr |
| 37 | Minisceongo Creek | 54 | 8328 | 154.2 | 174 | 3.2 | 8502 | 157.4 | 7-Mar | 13-May |
| NY Harbor | Richmond Creek | 56 | 971 | 17.3 | 4 | 0.1 | 975 | 17.4 | 27-Feb | 13-May |
| **Total** | | **658** | **241,158** | | | | **246,903** | | | |
| **CPUE** | | | | **366.5** | | **8.73** | | **375.2** | | |

**Table 14.** Results for all citizen science sampling sites in 2019, 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.

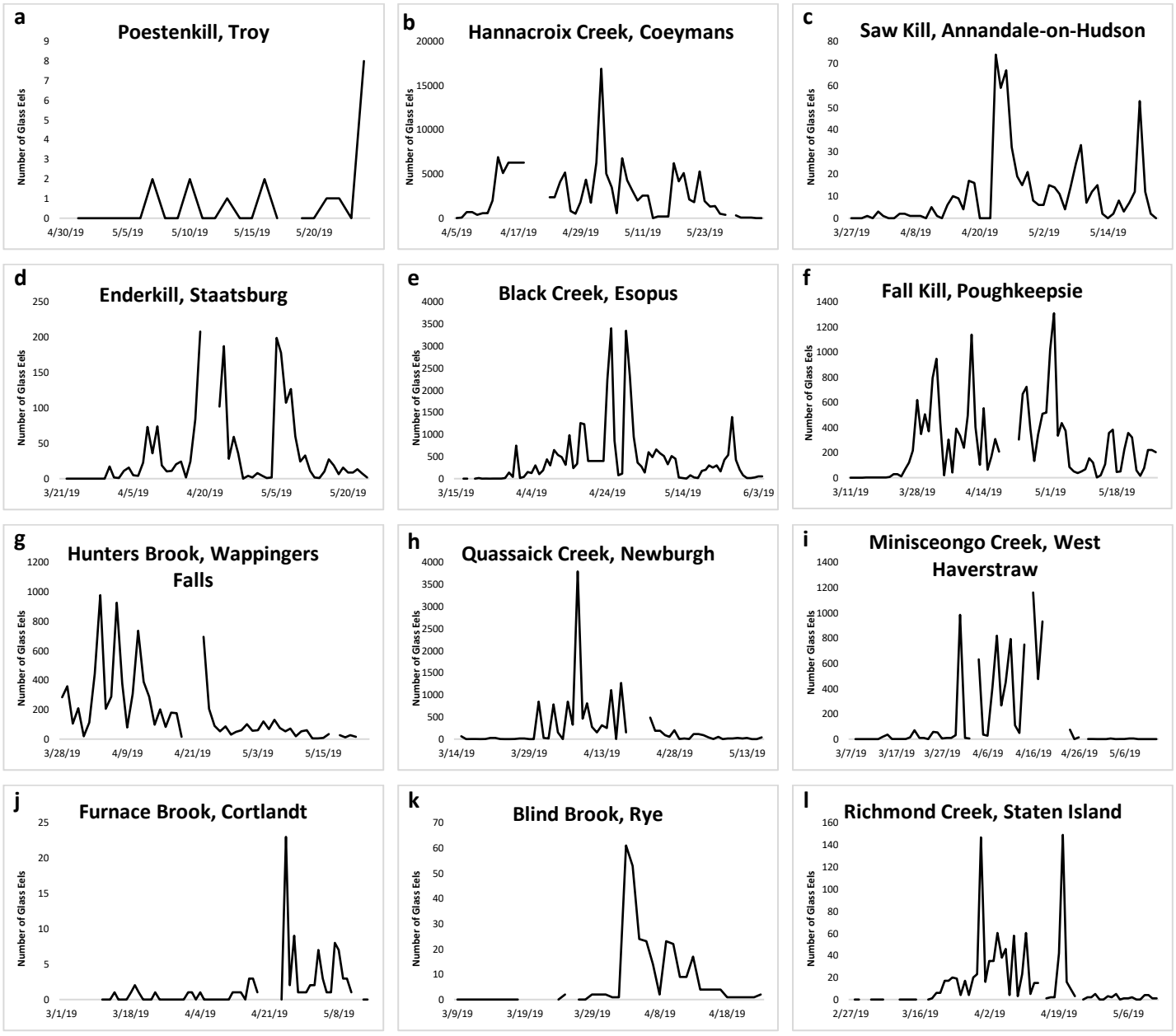


**Figure 12.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2019. b) Hannacroix Creek in Coeymans, c) Saw Kill in Annandale-on-Hudson d) Enderkill in Staatsburg. e) Black Creek in Esopus, f) Fall Kill in Poughkeepsie, g) Hunters Brook in Wappingers Falls, h) Quassaick Creek in Newburgh, i) Minisceongo Creek in West Haverstraw, j) Furnace Brook in Cortlandt, k) Blind Brook in Rye l) Richmond Creek in Staten Island. **Note:** Each graph has a different scale.

## 2020 Results

| RM | Site | Effort (days) | Total YOY Glass Eels | CPUE YOY Glass Eels | Total Older Elvers | CPUE Older Elvers | Total Eels Caught | CPUE (YOY and older) | Start Date | End Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 132 | Hannacroix Creek | 39 | 145424 | 3729 | 1158 | 30 | 146582 | 3759 | 9-Apr | 22-May |
| 98 | Saw Kill | 55 | 1978 | 36 | 38 | 1 | 2016 | 37 | 26-Mar | 23-May |
| 85 | Enderkill | 8 | 1 | 0 | 0 | 0 | 1 | 0 | 5-Mar | 13-Mar |
| 84 | Black Creek | 76 | 200312 | 2636 | 1163 | 15 | 201475 | 2651 | 10-Mar | 29-May |
| 76 | Fall Kill | 87 | 53124 | 611 | 509 | 6 | 53633 | 616 | 28-Feb | 27-May |
| 38 | Furnace Brook | 34 | 2103 | 62 | 35 | 1 | 2138 | 63 | 20-Feb | 24-Mar |
| 37 | Minisceongo Creek | 13 | 115 | 9 | 0 | 0 | 115 | 9 | 2-Mar | 16-Mar |
| NY Harbor | Richmond Creek | 29 | 477 | 16 | 0 | 0 | 477 | 16 | 24-Feb | 23-Mar |
| **Total** | | **341** | **403,534** | | **2,903** | | **406,437** | | | |
| **CPUE** | | | | **1183.4** | | **8.5** | | **1,191.9** | | |

**Table 15.** Results for all citizen science sampling sites in 2020, 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.

The sampling effort in 2020 was reduced due to the global COVID-19 pandemic. Some regular sites were not sampled at all, while others had to have nets removed early in the season. The four sites with a full sampling season (at least six weeks) were Hannacroix Creek, Saw Kill, Black Creek, and Fall Kill. These sites were monitored by small teams of staff (either DEC or partner organizations) with robust safety protocols in place.

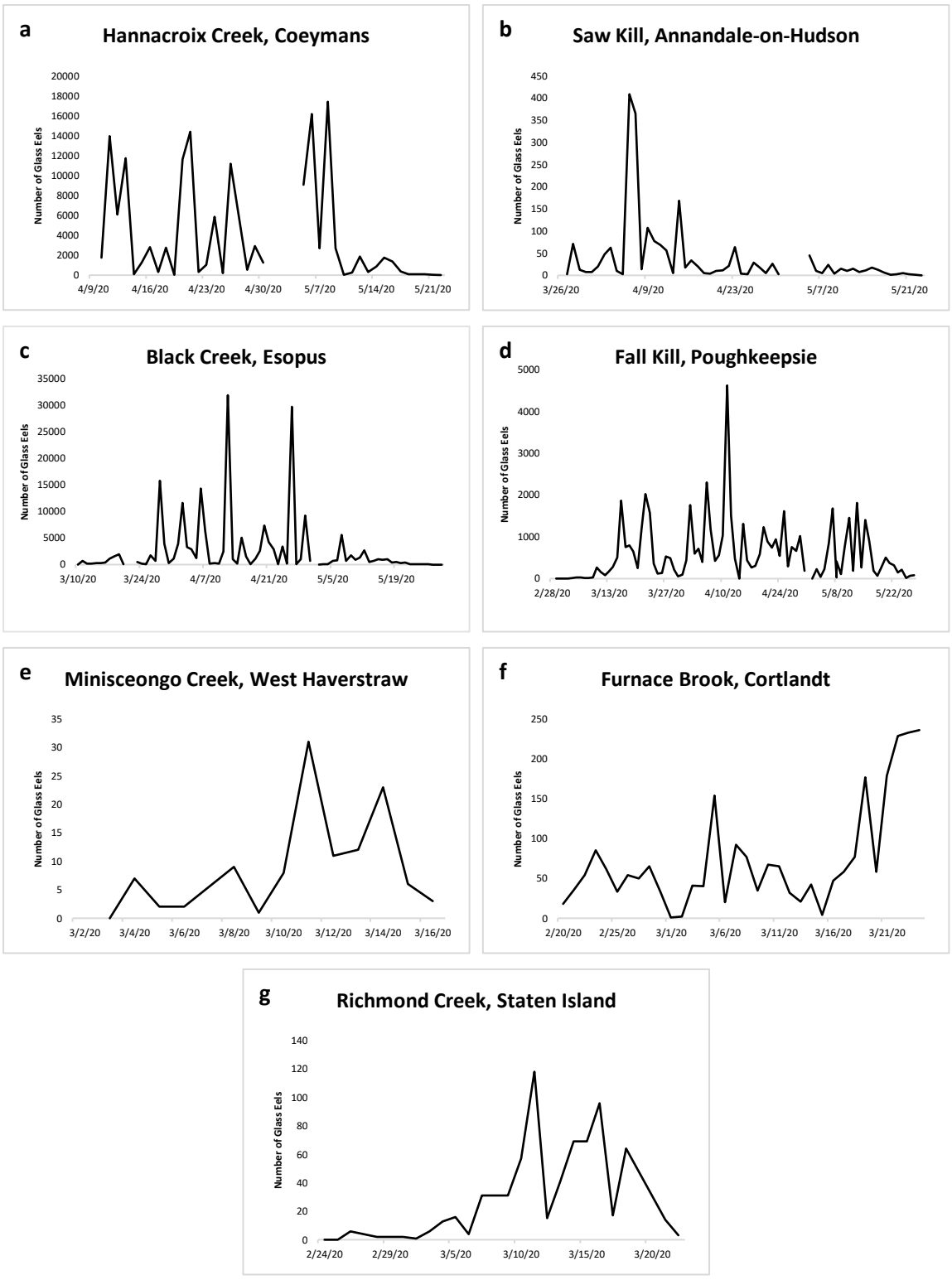


**Figure 13.** Daily catches of glass eels (YOY) in fyke nets at all sampling sites in 2020. a) Hannacroix Creek in Coeymans, b) Saw Kill in Annandale-on-Hudson c) Black Creek in Esopus, d) Fall Kill in Poughkeepsie, e) Minisceongo Creek in West Haverstraw, f) Furnace Brook in Cortlandt, g) Richmond 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 is not checked on weekend days.

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.

## Eel Ladder Restoration

### Mitigating Barriers to Migration

In 2011, a 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.

In 2017, another eel ladder was placed on the Sparkill in Rockland County. This device was modified to be able to raise and lower the ladder and bucket to the stream from a platform above the dam. The ladder itself (PVC tube and bucket) is smaller than the design at the other sampling sites. Similar to the other design, two hoses siphon upstream water into the ladder to keep it wet and to provide the scent of upstream waters.

### 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** |

### 2016 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 | 134 | 26 | 14 | **179** |
| Crum Elbow | 6 | 53 | 9 | 2 | **70** |

### 2017 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 | 5 | 2 | 0 | **7** |
| Crum Elbow | 13 | 107 | 23 | 0 | **143** |
| Sparkill | 0 | 25 | 6 | 0 | **31** |

### 2018 Results

| Site | Stage 1 <3 inches | Stage 2 3-6 inches | Stage 3 6-12 inches | Stage 4 >12 inches | Total Eels |
|---|---|---|---|---|---|
| Saw Kill | 15 | 124 | 38 | 5 | **182** |
| Crum Elbow | 7 | 27 | 2 | 0 | **36** |
| Sparkill | 5 | 3 | 0 | 0 | **8** |

### 2019 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 | 53 | 12 | 2 | **72** |
| Crum Elbow | 1 | 14 | 3 | 0 | **18** |
| Sparkill | 11 | 17 | 0 | 0 | **28** |

## 2020 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 | 64 | 9 | 3 | **77** |
| Crum Elbow | 18 | 40 | 1 | 0 | **59** |

Low-cost eel ladder at Furnace Brook, Westchester County

The raise-able eel ladder at Sparkill, Rockland County

## Eel Project Partners by Site

### Poestenkill, Troy
Sanctuary for Independent Media
Mount Ida Preservation

### Hannacroix Creek, Coeymans
Cornell Cooperative Extension of Greene County
New Baltimore Conservancy
Coxsackie Elementary School
Coxsackie-Athens High School
Pieter B Coeymans Elementary School

### Saw Kill, Annandale-on-Hudson
Bard College
Hudsonia
Saw Kill Watershed Community

### Black Creek, Esopus
Scenic Hudson
Kingston High School
New Paltz High School
SUNY New Paltz
The Mount Academy

### Fall Kill, Poughkeepsie
Poughkeepsie High School
Arlington High School
Mid-Hudson Children's Museum
Marist College
River Haven

### Enderkill, Staatsburg
Marist College
NY State Parks Recreation and Historic Preservation
Dave Lindemann
Oakwood Friends School
Troop 228
Rhinebeck High School

### Hunters Brook, Wappingers Falls
Wappingers Jr High School
Our Lady of Lourdes High School
Roy C Ketcham High School
John Jay High School

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

### Indian Brook, Cold Spring
National Audubon at Constitution Marsh

### Furnace Brook, Cortlandt
Teatown Lake Reservation
Ossining High School

### 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