

IPRenewal NPEmails

From: Nancy Decker <ndecker@asaac.com>
Sent: Thursday, April 21, 2016 10:16 AM
To: Wentzel, Michael
Cc: Dara Gray
Subject: [External_Sender] Email 4 for 2014 YCR
Attachments: 2014-Chapter 4.pdf

Michael,

Please let me know if you did not receive all 9 emails.

Thanks,
Nancy

Nancy Decker

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Subject: [External_Sender] Email 4 for 2014 YCR
Sent Date: 4/21/2016 10:16:02 AM
Received Date: 4/21/2016 10:16:23 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

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CHAPTER 4

SPATIOTEMPORAL DISTRIBUTION OF SELECTED SPECIES OF HUDSON RIVER ESTUARY FISHES

This chapter presents graphs of the spatiotemporal distribution within the Hudson River for 16 selected species as well as graphs of the temporal, geographical, and annual abundance indices for these species. Length data for young-of-year fish of several species are plotted. Supporting tables for these graphs are provided in Appendices [C \(Species Composition\)](#), [D \(Density and Standing Crop Estimates\)](#), [E \(Temporal and Geographical Distribution Indices\)](#), [F \(Annual Abundance Indices\)](#), and [G \(Length Frequency Distribution\)](#).

4.1 SPECIES COLLECTED

Overall species composition for each year from 1974 to 2014 and species composition by survey for 2014 are tabulated. Three new species were collected in 2014: brindled madtom, pink wormfish, and wrymouth; all collected in the LRS.

Links to Tables	Table	Supporting Appendix Tables
Fish species collected for 1974 to 2014	4-1	--
Species composition of fish by survey for 2014	4-2	C-1, C-2, C-3

4.2 STRIPED BASS

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval fish for 2014 LRS	4-1	D-1 to D-6
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-2	D-7 to D-12
Spatiotemporal distribution of yearling fish for 2014 LRS/FJS/BSS	4-3	D-13 to D-18
Spatiotemporal distribution of older-than-yearling fish for 2014 LRS/FJS/BSS	4-4	D-19 to D-24
Temporal distribution indices for LRS for 1974 to 2014	4-5	E-1
Geographical distribution indices for LRS for 1974 to 2014	4-6	E-2
Geographical distribution indices for BSS for 1974 to 2014	4-7	E-3
Annual abundance indices	4-8	F-1
Weekly length statistics for young-of-year fish for 2014 LRS/FJS/BSS	4-9	G-1 to G-3

4.3 WHITE PERCH

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval fish for 2014 LRS	4-10	D-25 to D-30
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-11	D-31 to D-36
Spatiotemporal distribution of yearling fish for 2014 LRS/FJS/BSS	4-12	D-37 to D-42
Spatiotemporal distribution of older-than-yearling fish for 2014 LRS/FJS/BSS	4-13	D-43 to D-48
Temporal distribution indices for LRS for 1974 to 2014	4-14	E-4
Geographical distribution indices for LRS for 1974 to 2014	4-15	E-5
Geographical distribution indices for BSS for 1974 to 2014	4-16	E-6
Annual abundance indices	4-17	F-2
Weekly length statistics for young-of-year fish for 2014 LRS/FJS/BSS	4-18	G-4 to G-6

4.4 ATLANTIC TOMCOD

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval fish for 2014 LRS	4-19	D-49 to D-54
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-20	D-55 to D-60
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-21	D-61 to D-66
Temporal distribution indices for LRS for 1974 to 2014	4-22	E-7
Geographical distribution indices for LRS for 1974 to 2014	4-23	E-8
Geographical distribution indices for FJS for 1979 to 2014	4-24	E-9
Annual abundance indices	4-25	F-3
Weekly length statistics for young-of-year fish for 2014 LRS/FJS/BSS	4-26	G-7 to G-9

4.5 BAY ANCHOVY

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval fish for 2014 LRS	4-27	D-67 to D-72
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-28	D-73 to D-78
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-29	D-79 to D-84
Temporal distribution indices for LRS for 1988 to 2014	4-30	E-10
Geographical distribution indices for LRS for 1988 to 2014	4-31	E-11
Geographical distribution indices for BSS for 1974 to 2014	4-32	E-12
Annual abundance indices	4-33	F-4
Weekly length statistics for young-of-year fish for 2014 LRS/FJS/BSS	4-34	G-10 to G-12

4.6 AMERICAN SHAD

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval fish for 2014 LRS	4-35	D-85 to D-90
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-36	D-91 to D-96
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-37	D-97 to D-102
Temporal distribution indices for LRS for 1974 to 2014	4-38	E-13
Geographical distribution indices for LRS for 1974 to 2014	4-39	E-14
Geographical distribution indices for BSS for 1974 to 2014	4-40	E-15
Annual abundance indices	4-41	F-5
Weekly length statistics for young-of-year fish for 2014 LRS/FJS/BSS	4-42	G-13 to G-15

4.7 RIVER HERRINGS (*Alosa* spp.)

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval fish for 2014 LRS	4-43	D-103 to D-108
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-44	D-109 to D-114
Temporal distribution indices for LRS for 1974 to 2014	4-45	E-16
Geographical distribution indices for LRS for 1974 to 2014	4-46	E-17
Geographical distribution indices for BSS for 1974 to 2014	4-47	E-18

4.8 ALEWIFE

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-48	D-115 to D-120
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-49	D-121 to D-126
Geographical distribution indices for BSS for 1974 to 2014	4-50	E-19
Annual abundance indices	4-51	F-6
Weekly length statistics for young-of-year fish for 2014 FJS/BSS	4-52	G-16 to G-17

4.9 BLUEBACK HERRING

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-53	D-127 to D-132
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-54	D-133 to D-138
Geographical distribution indices for BSS for 1974 to 2014	4-55	E-20
Annual abundance indices	4-56	F-7
Weekly length statistics for young-of-year fish for 2014 FJS/BSS	4-57	G-18 to G-19

4.10 GIZZARD SHAD

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-58	D-139 to D-144
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-59	D-145 to D-150
Geographical distribution indices for BSS for 1974 to 2014	4-60	E-21

4.11 RAINBOW SMELT

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	--	D-151 to D-156
Temporal distribution indices for LRS for 1974 to 2014	4-61	E-22
Geographical distribution indices for LRS for 1974 to 2014	4-62	E-23
Geographical distribution indices for FJS for 1979 to 2014	4-63	E-24
Annual abundance indices	4-64	F-8

4.12 HOGCHOKER

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval fish for 2014 LRS	4-65	D-157 to D-162
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-66	D-163 to D-168
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-67	D-169 to D-174
Geographical distribution indices for FJS for 1979 to 2014	4-68	E-25
Annual abundance indices	4-69	F-9

4.13 SPOTTAIL SHINER

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-70	D-175 to D-180
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-71	D-181 to D-186
Geographical distribution indices for BSS for 1974 to 2014	4-72	E-26
Annual abundance indices	4-73	F-10
Weekly length statistics for young-of-year fish for 2014 FJS/BSS	4-74	G-20 to G-21

4.14 ATLANTIC STURGEON

Links to Table/Graph	Table/Graph	Supporting Appendix Tables
Collections of fish for 2014 LRS/FJS/BSS	4-3	--
Spatiotemporal distribution of yolk-sac, post yolk-sac larval, and young-of-year fish for 2014 LRS/FJS/BSS	4-75	D-187 to D-192
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-76	D-193 to D-198

4.15 SHORTNOSE STURGEON

Links to Table/Graph	Table/Graph	Supporting Appendix Tables
Collections of fish for 2014 LRS/FJS/BSS	4-4	--
Collections of unidentified sturgeon for 2014 LRS/FJS/BSS	4-5	--
Spatiotemporal distribution of yolk-sac, post yolk-sac larval, and young-of-year fish for 2014 LRS/FJS/BSS	4-77	D-199 to D-204
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-78	D-205 to D-210

4.16 WHITE CATFISH

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-79	D-211 to D-216
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-80	D-217 to D-222
Geographical distribution indices for FJS for 1979 to 2014	4-81	E-27
Annual abundance indices	4-82	F-11
Weekly length statistics for young-of-year fish for 2014 FJS/BSS	4-83	G-22 to G-23

4.17 WEAKFISH

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-84	D-223 to D-228
Spatiotemporal distribution of yearling and older fish for 2014 LRS/FJS/BSS	4-85	D-229 to D-234
Geographical distribution indices for FJS for 1979 to 2014	4-86	E-28
Annual abundance indices	4-87	F-12
Weekly length statistics for young-of-year fish for 2014 FJS/BSS	4-88	G-24 to G-25

4.18 BLUEFISH

Links to Graphs	Graph	Supporting Appendix Tables
Spatiotemporal distribution of young-of-year fish for 2014 LRS/FJS/BSS	4-89	D-235 to D-240
Geographical distribution indices for BSS for 1974 to 2014	4-90	E-29
Annual abundance indices	4-91	F-13

[Link to References](#)

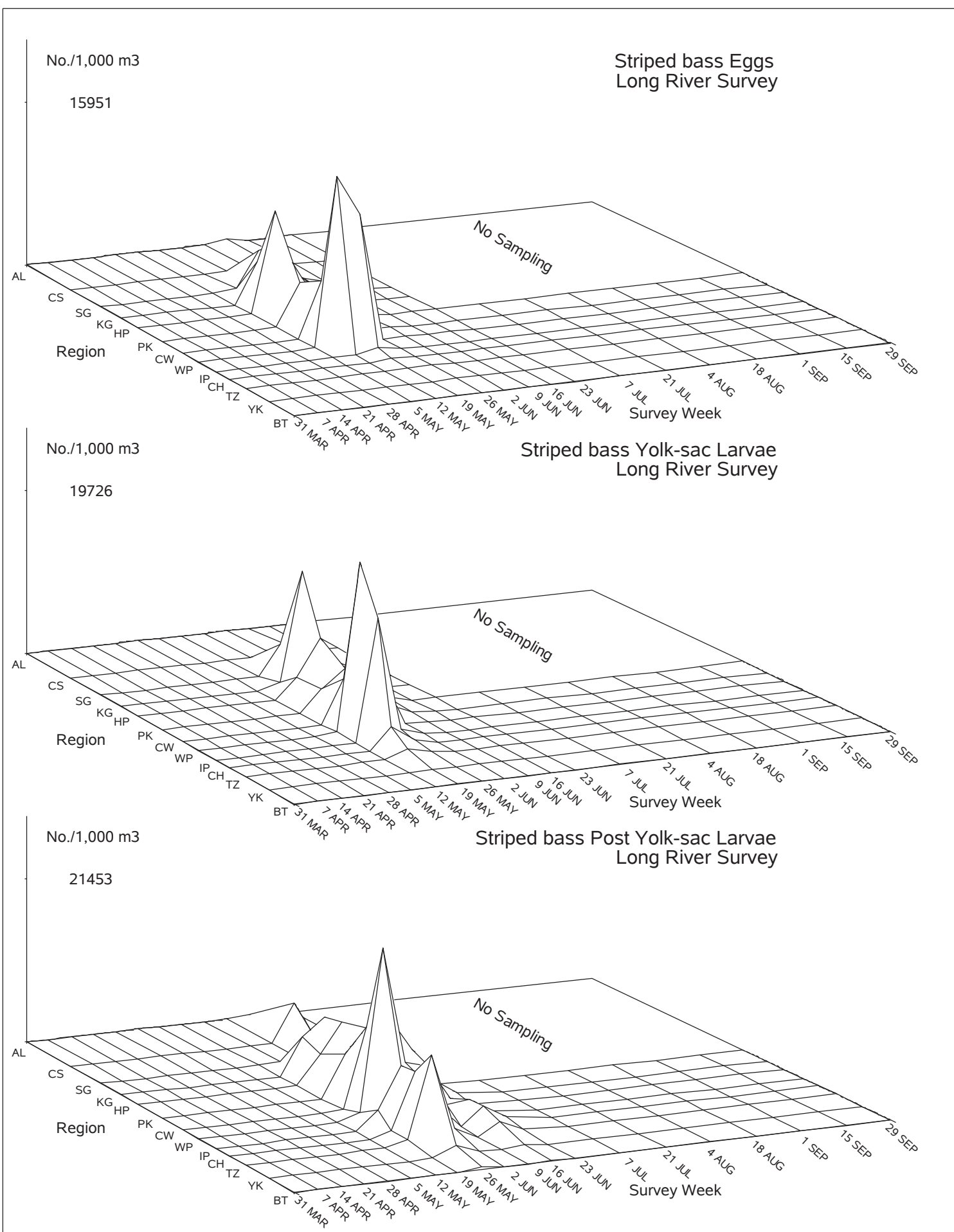


Figure 4-1. Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval striped bass in the Hudson River estuary based on the 2014 Long River Survey.

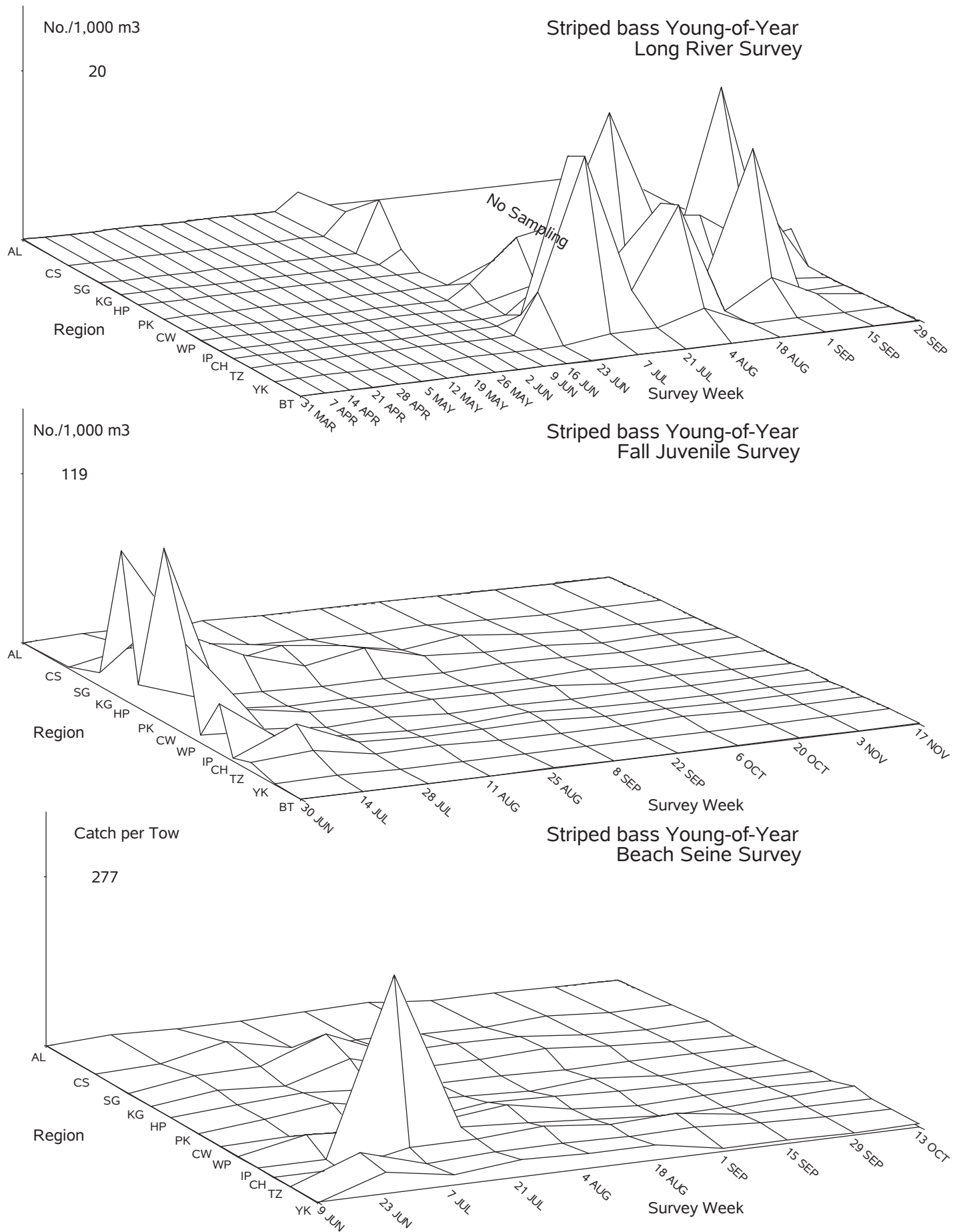


Figure 4-2. Spatiotemporal distribution of young-of-year striped bass in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

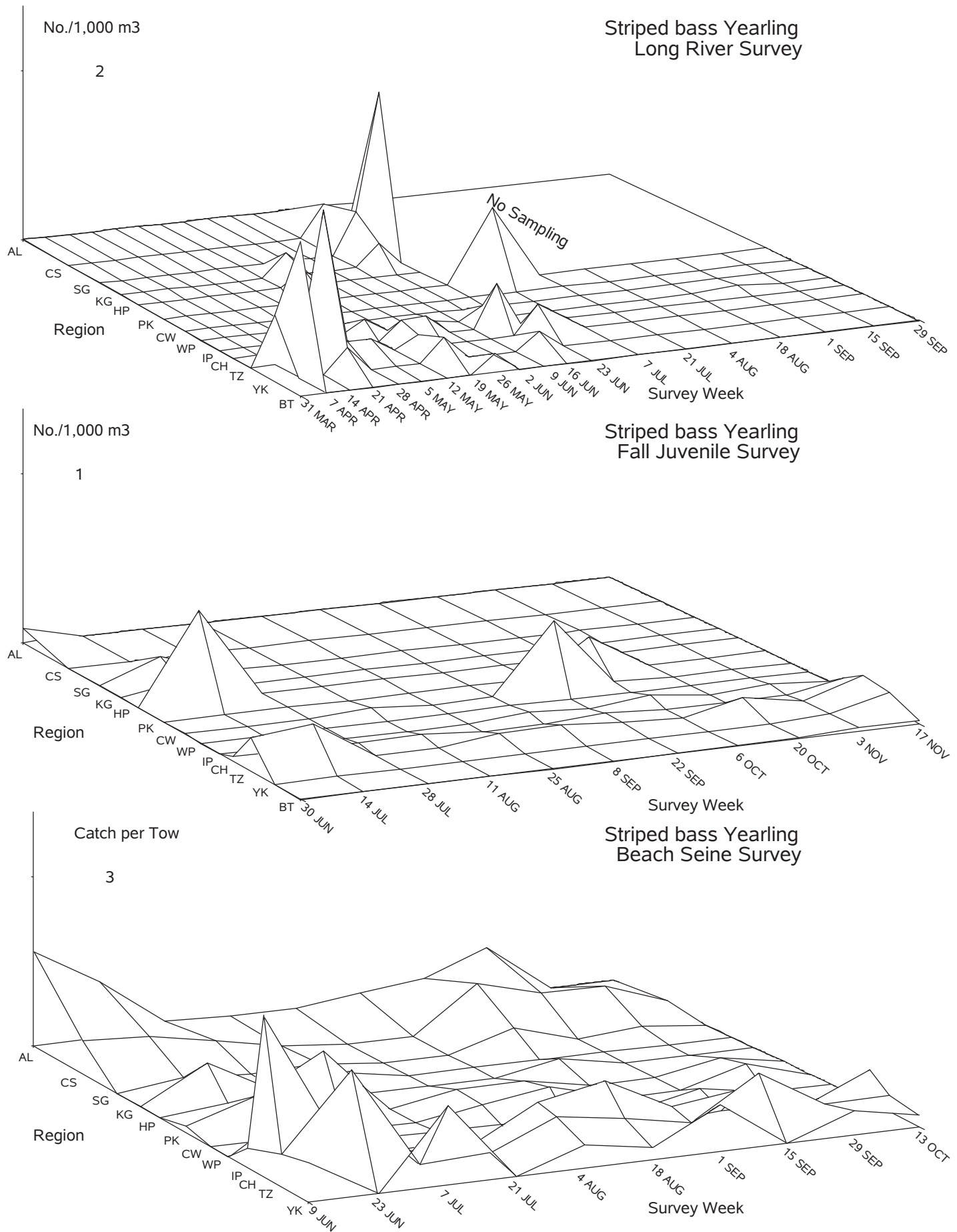


Figure 4-3. Spatiotemporal distribution of yearling striped bass in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

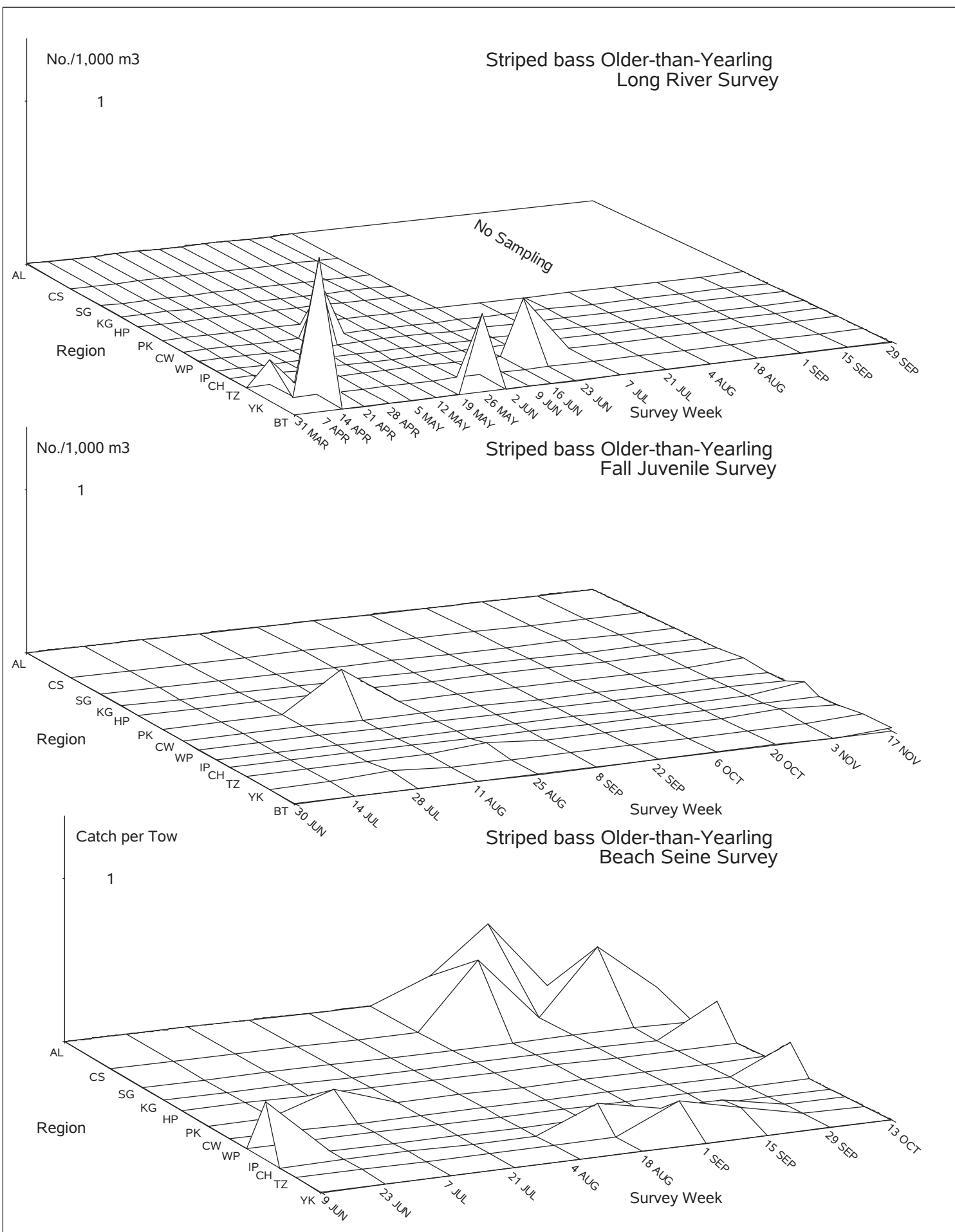


Figure 4-4. Spatiotemporal distribution of older-than-yearling striped bass in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

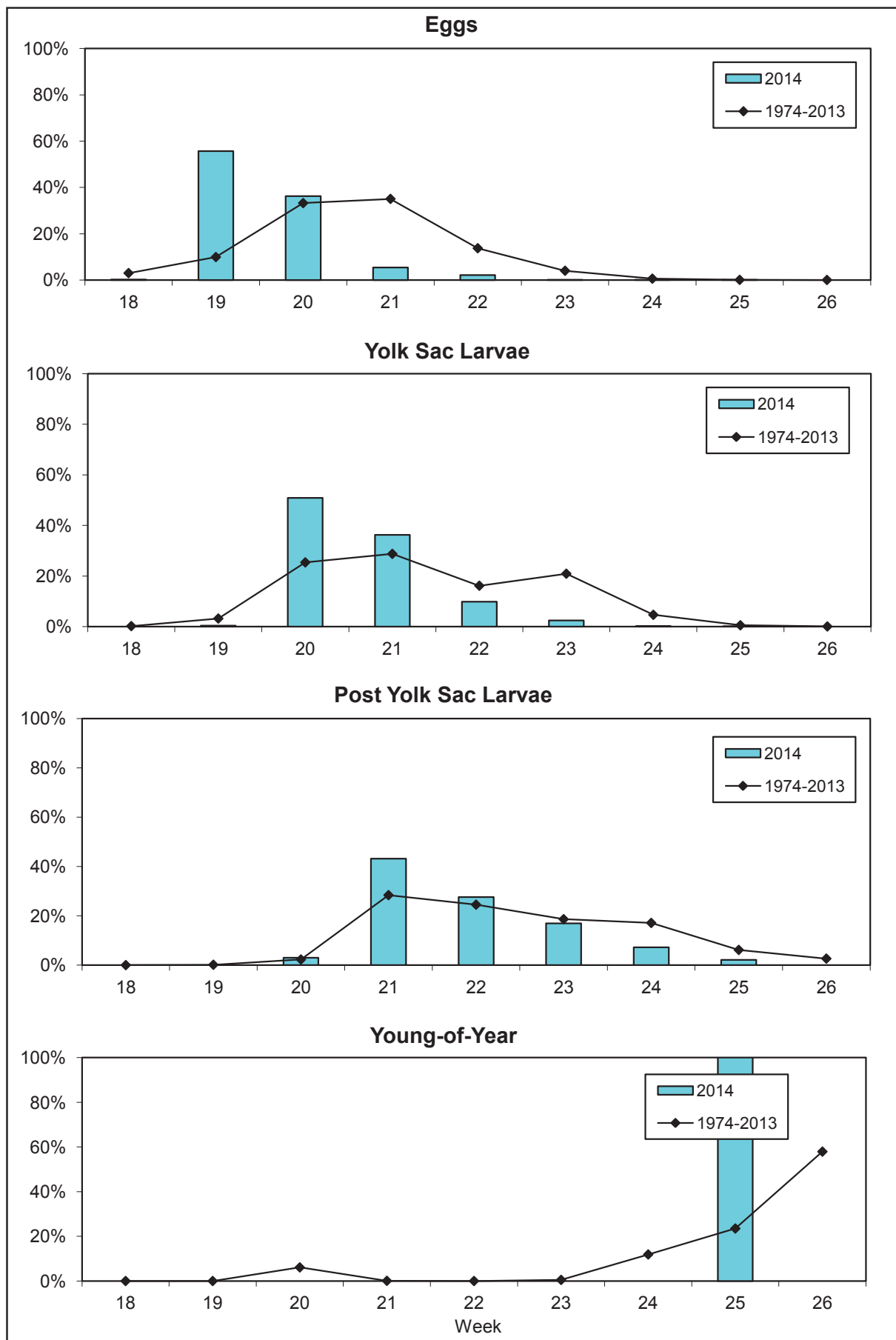


Figure 4-5. Temporal distribution indices for striped bass collected during Long River surveys of the Hudson River estuary, 1974-2014.

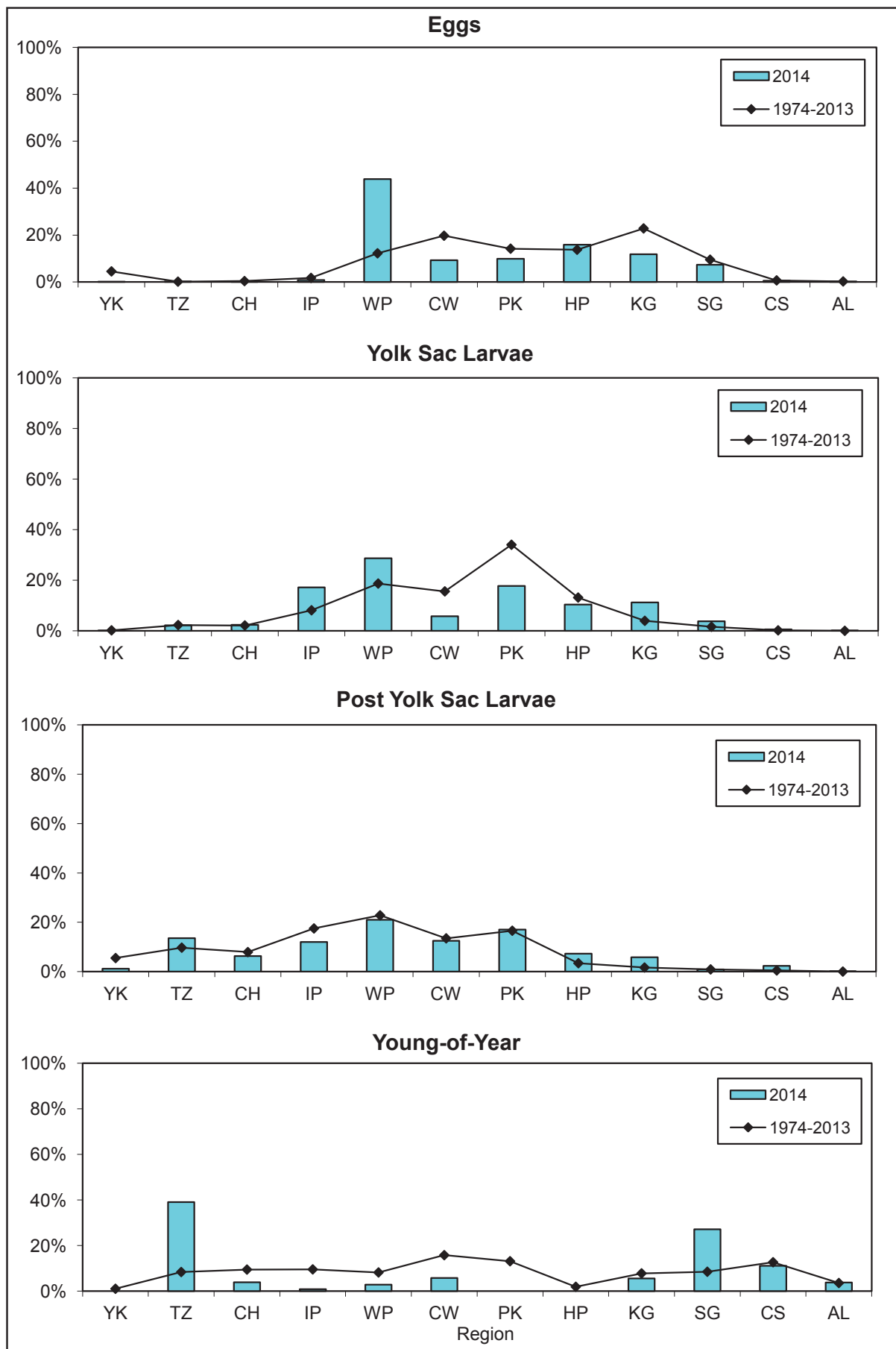


Figure 4-6. Geographic distribution indices for striped bass collected during Long River surveys of the Hudson River estuary, 1974-2014.

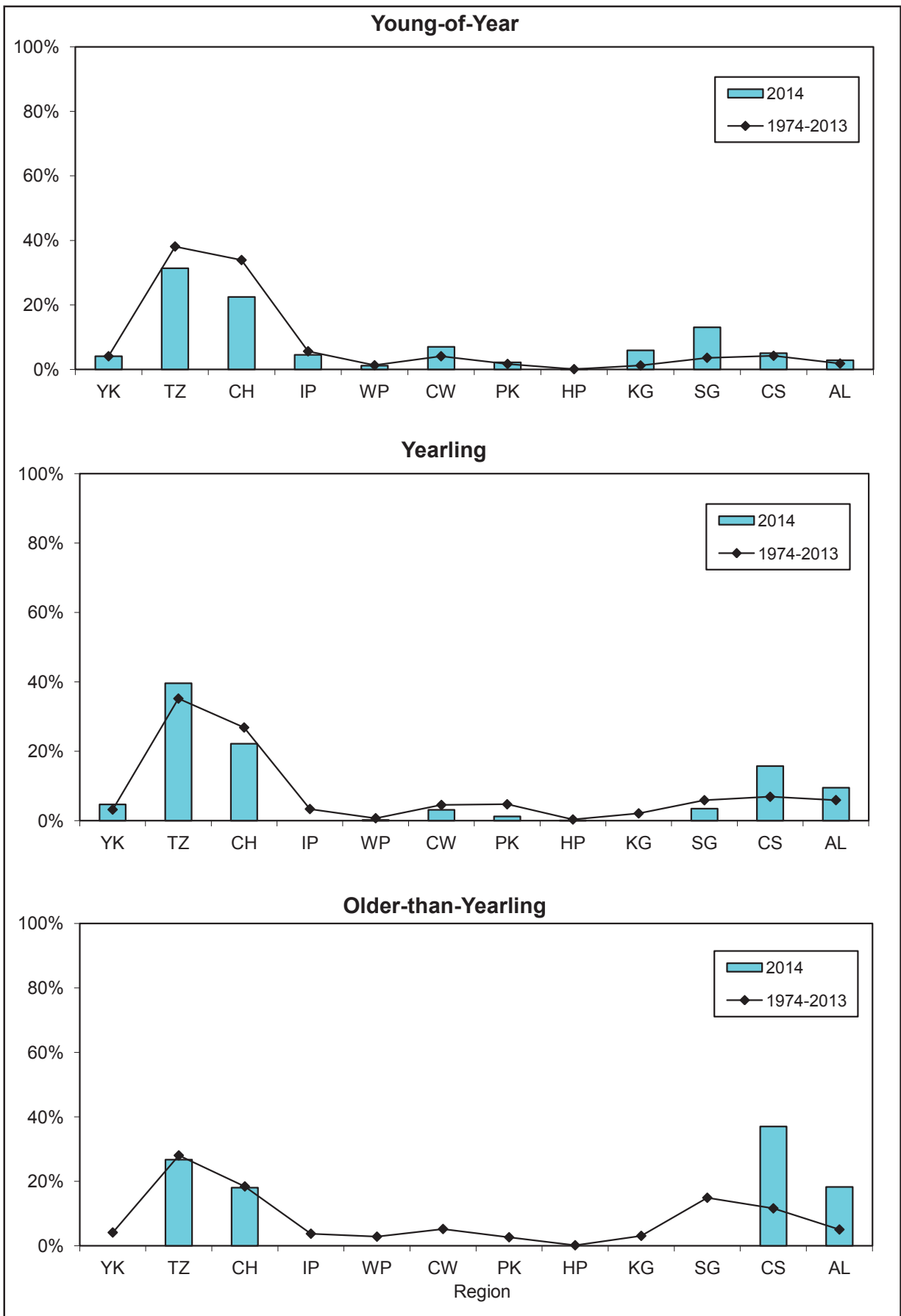


Figure 4-7. Geographic distribution indices for striped bass collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

Striped bass

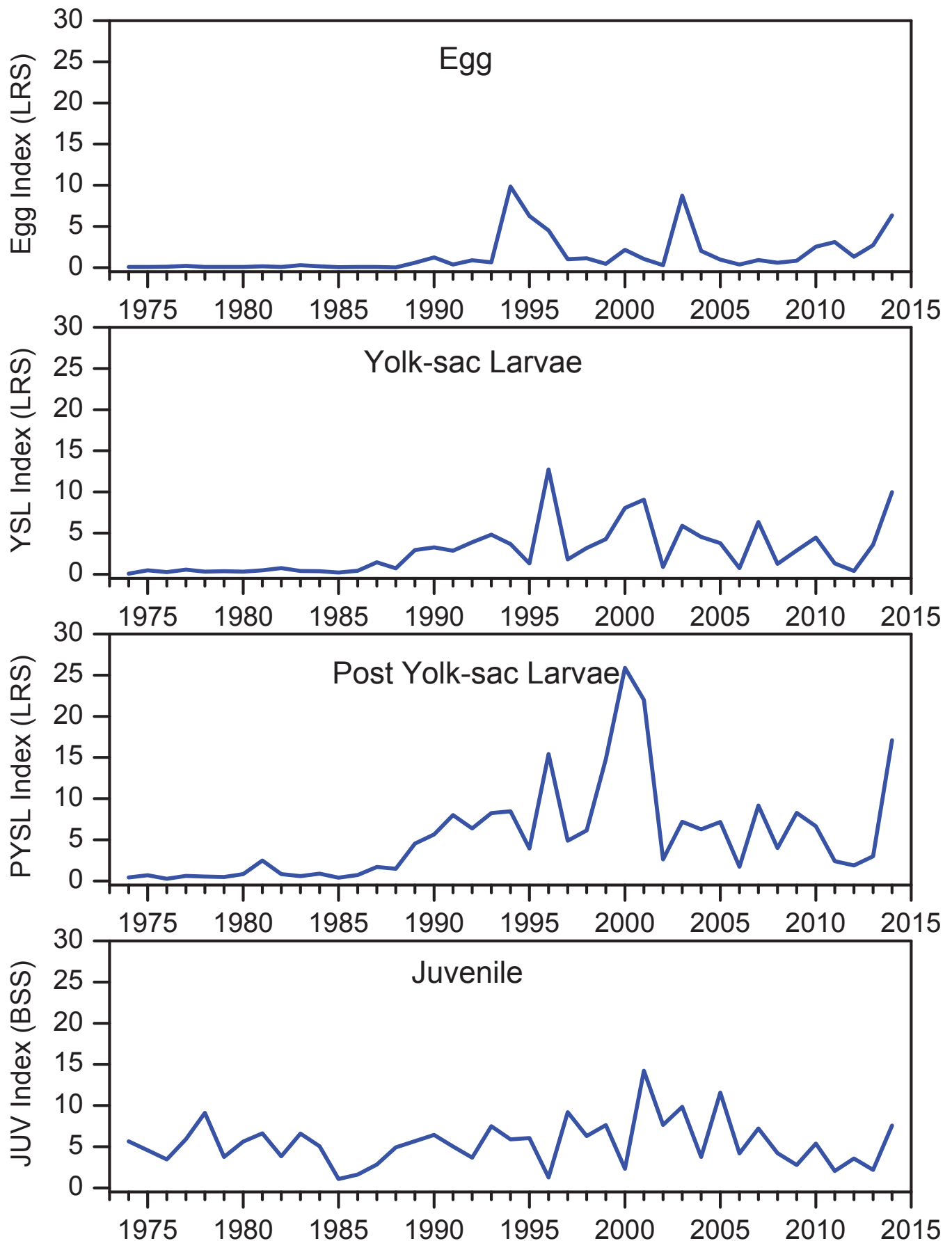


Figure 4-8. Striped bass indices of annual abundance based on Long River Survey and Beach Seine Survey, 1974-2014.

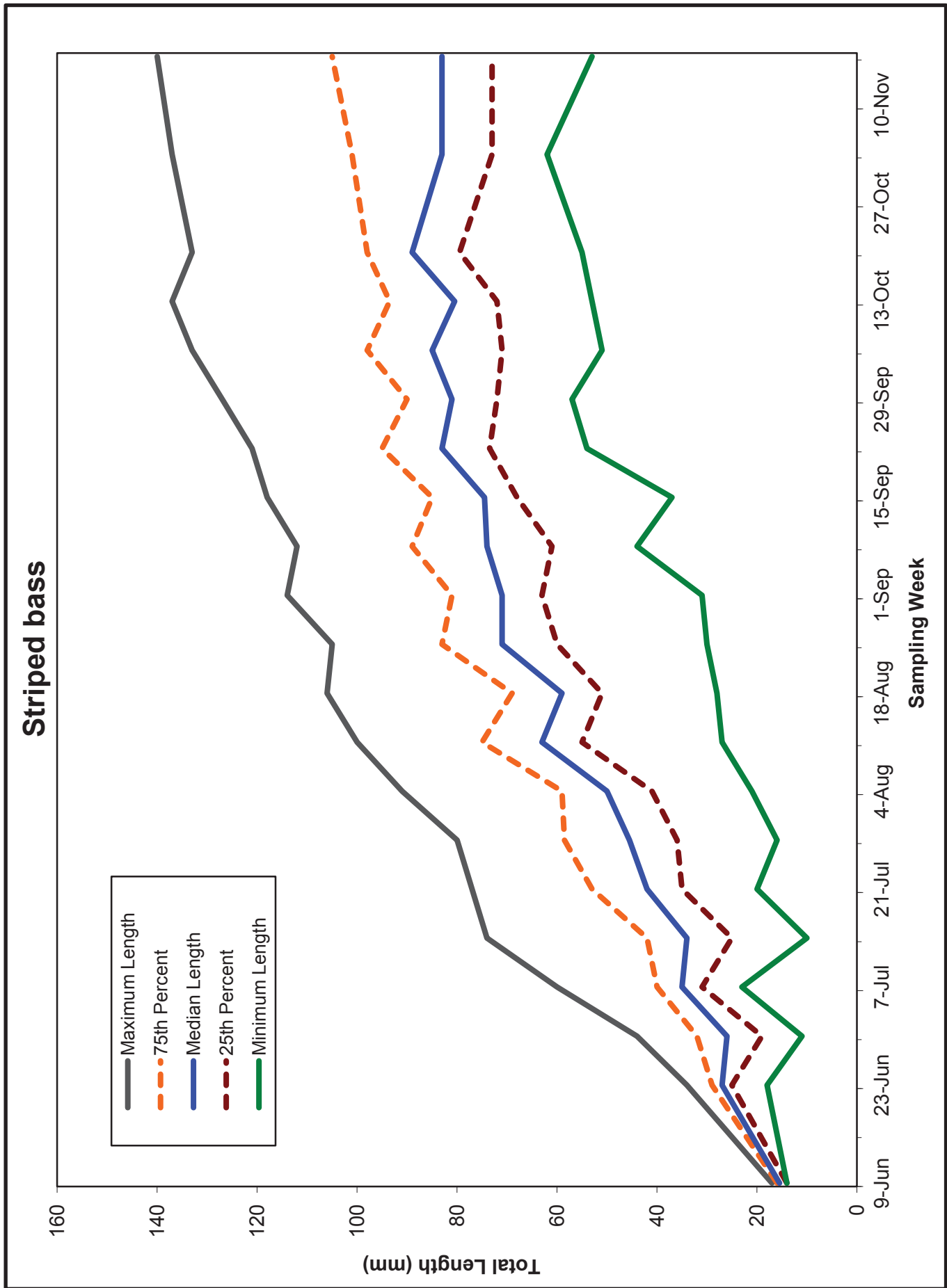


Figure 4-9. Weekly length statistics for young-of-year striped bass in the Hudson River estuary, 2014.

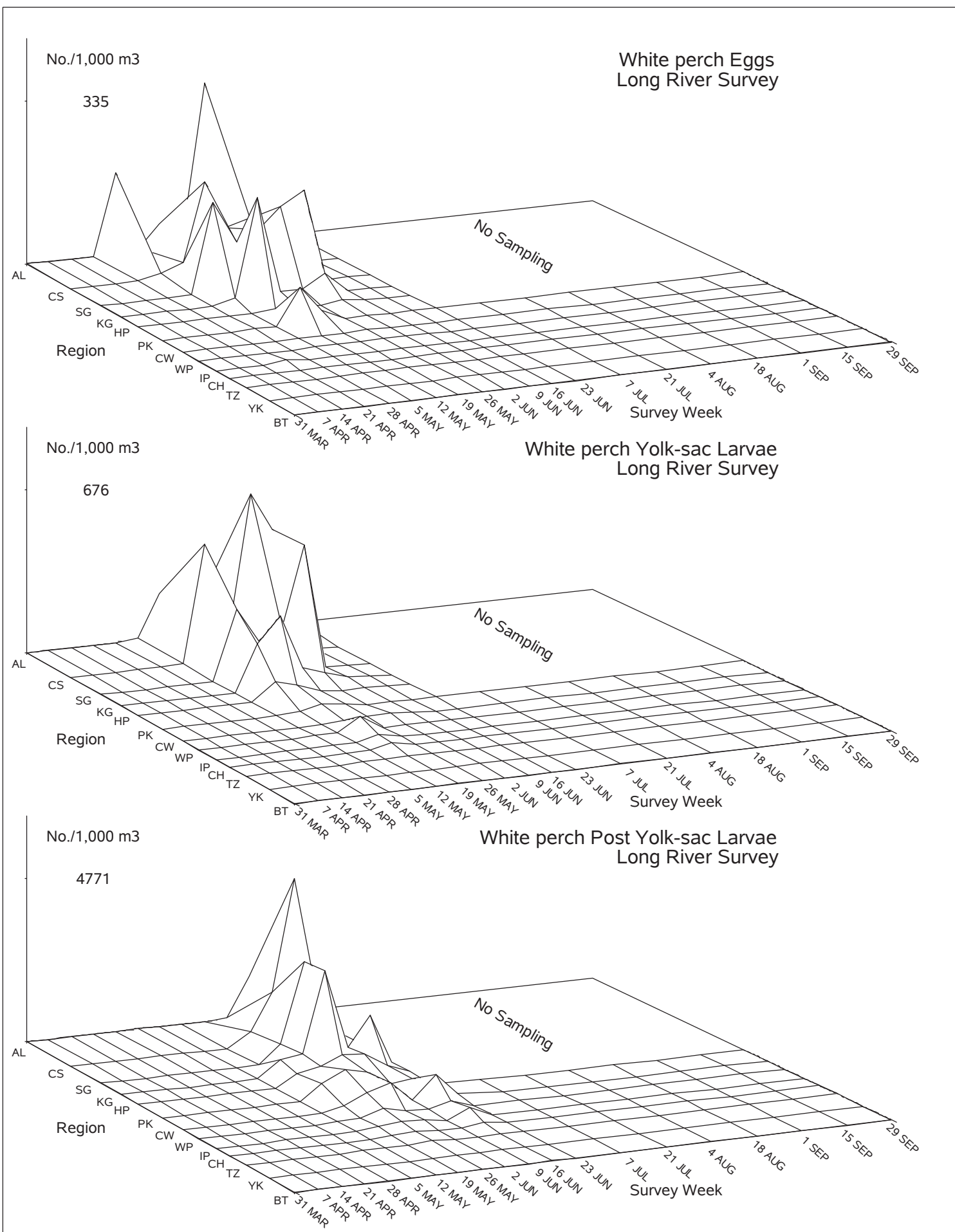


Figure 4-10. Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval white perch in the Hudson River estuary based on the 2014 Long River Survey.

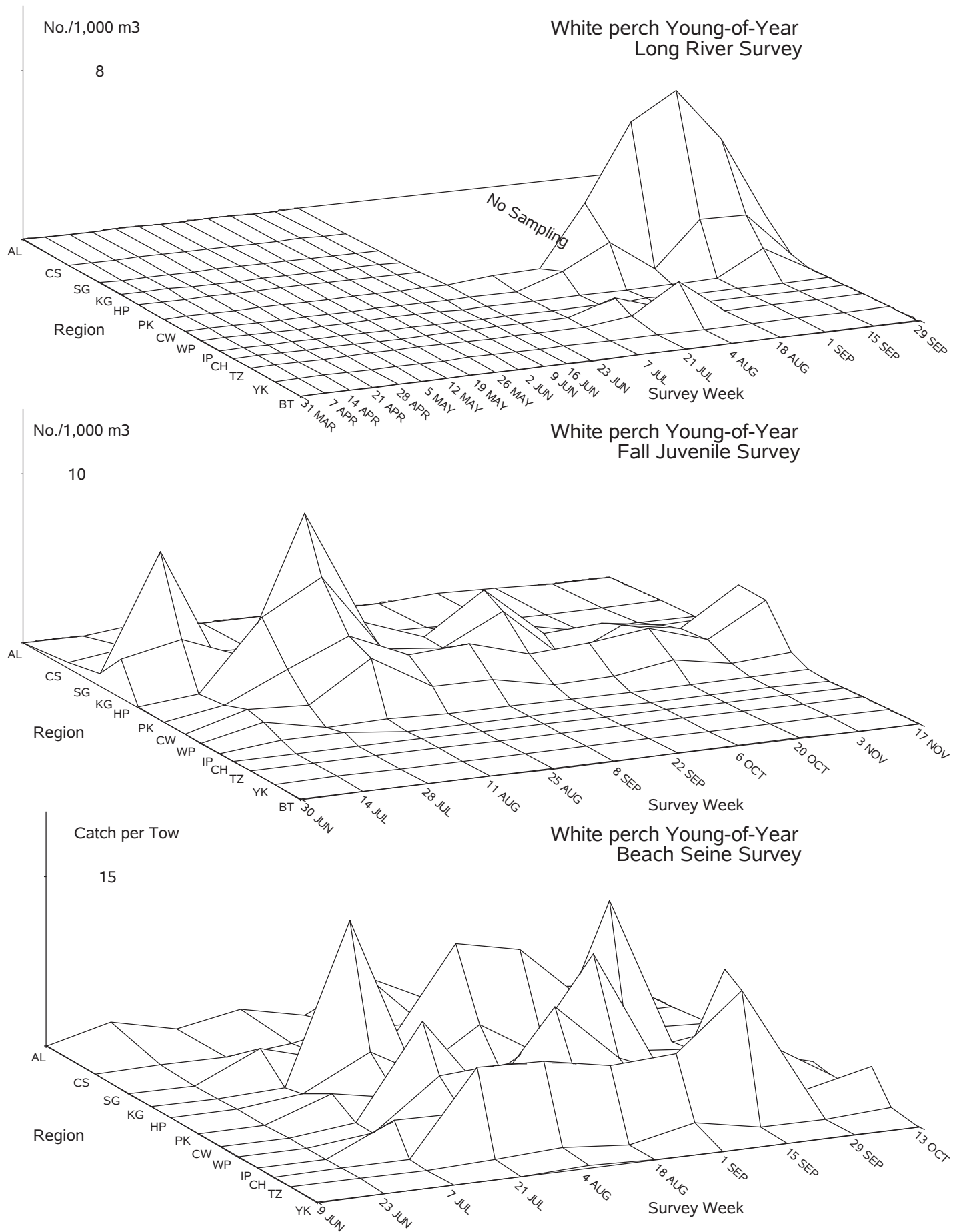


Figure 4-11. Spatiotemporal distribution of young-of-year white perch in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

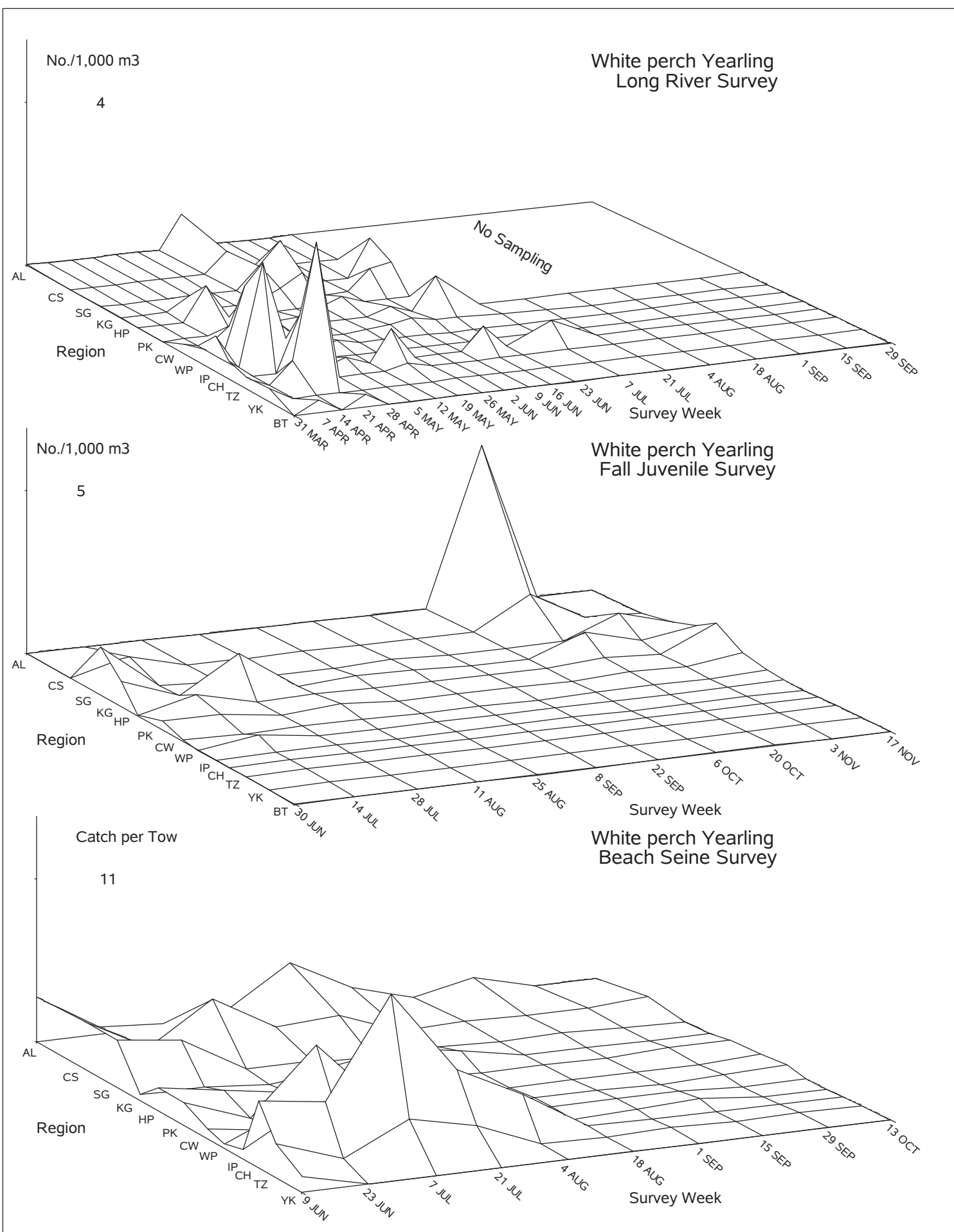


Figure 4-12. Spatiotemporal distribution of yearling white perch in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

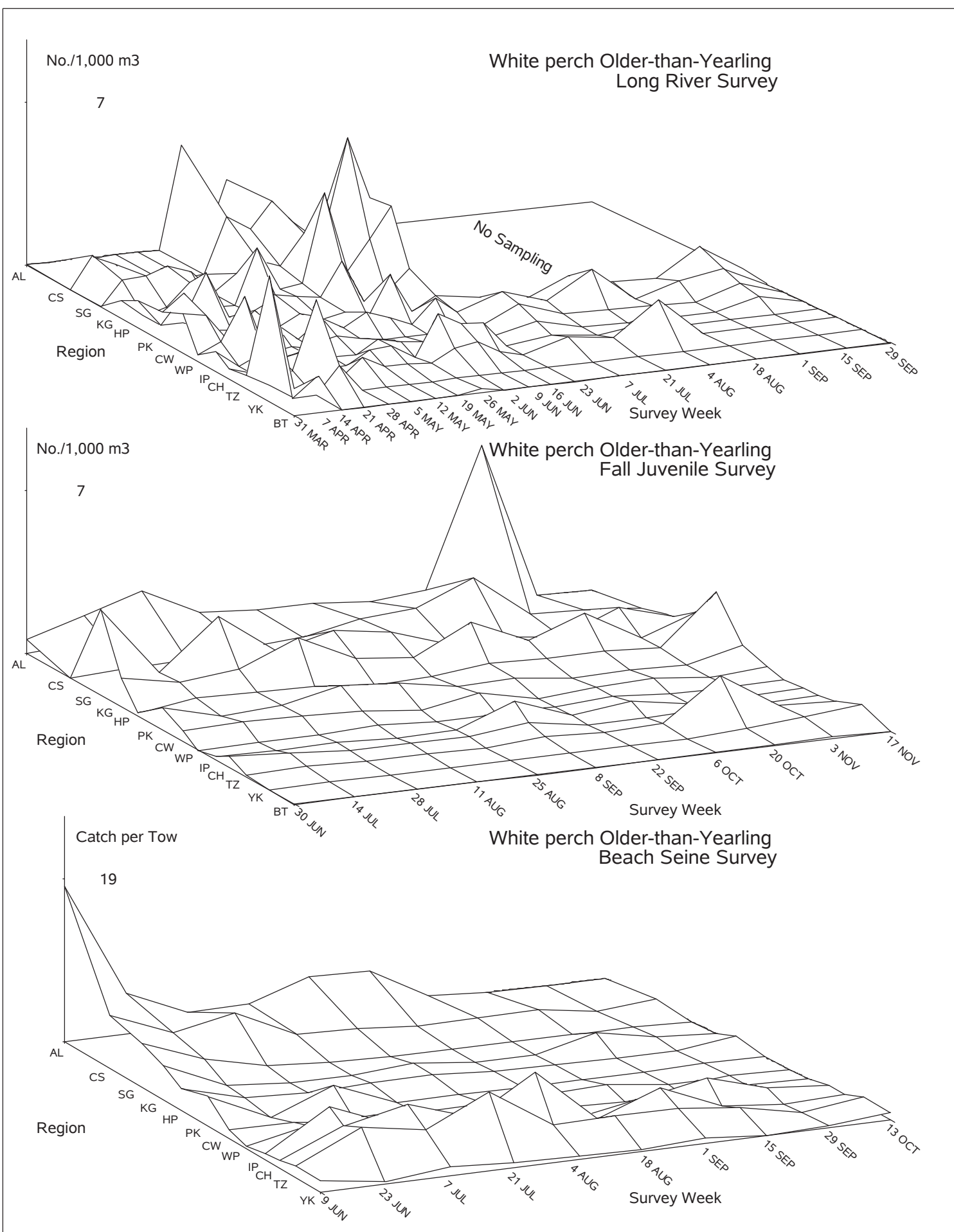


Figure 4-13. Spatiotemporal distribution of older-than-yearling white perch in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

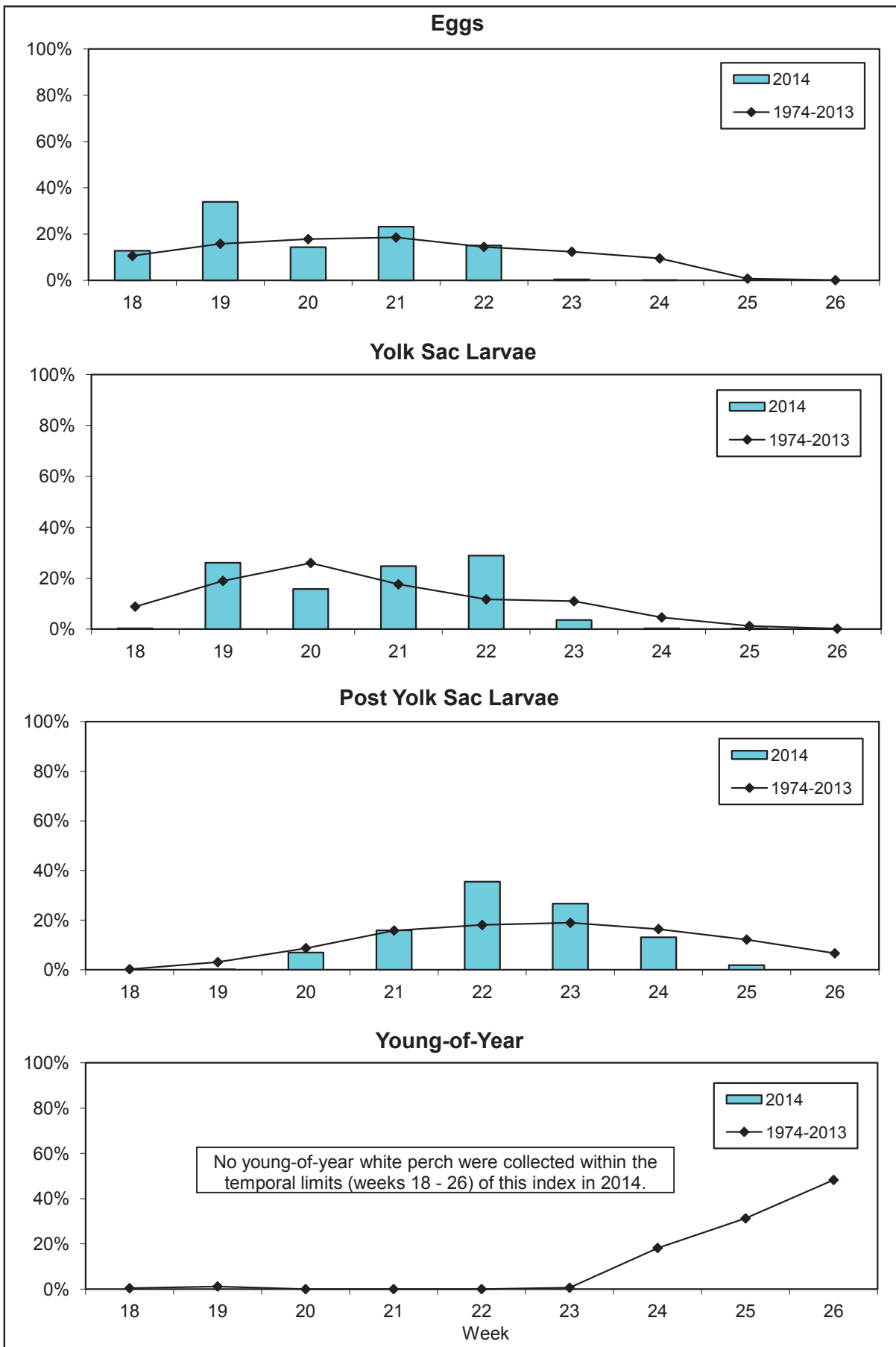


Figure 4-14. Temporal distribution indices for white perch collected during Long River surveys of the Hudson River estuary, 1974-2014.

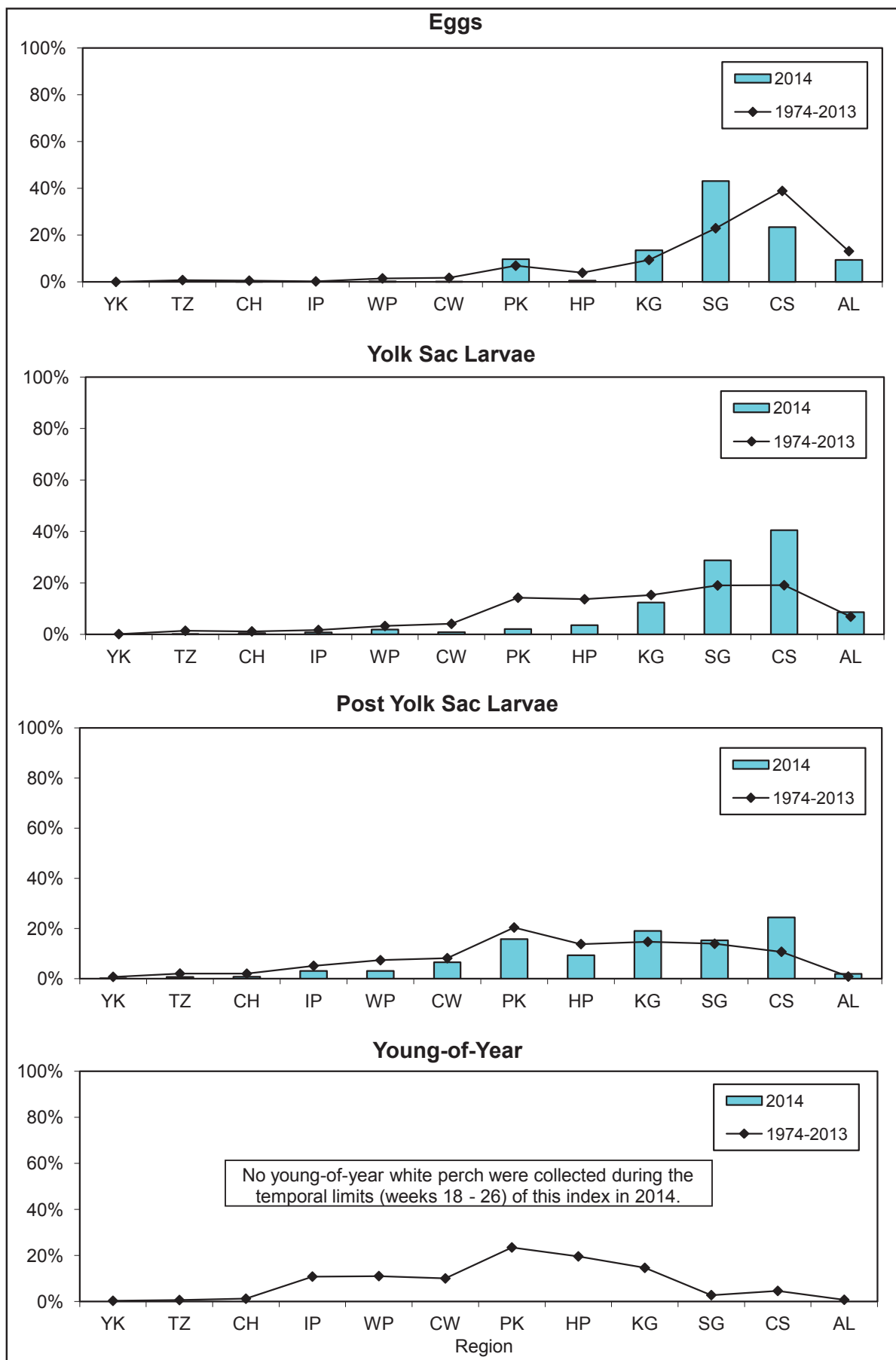


Figure 4-15. Geographic distribution indices for white perch collected during Long River surveys of the Hudson River estuary, 1974-2014.

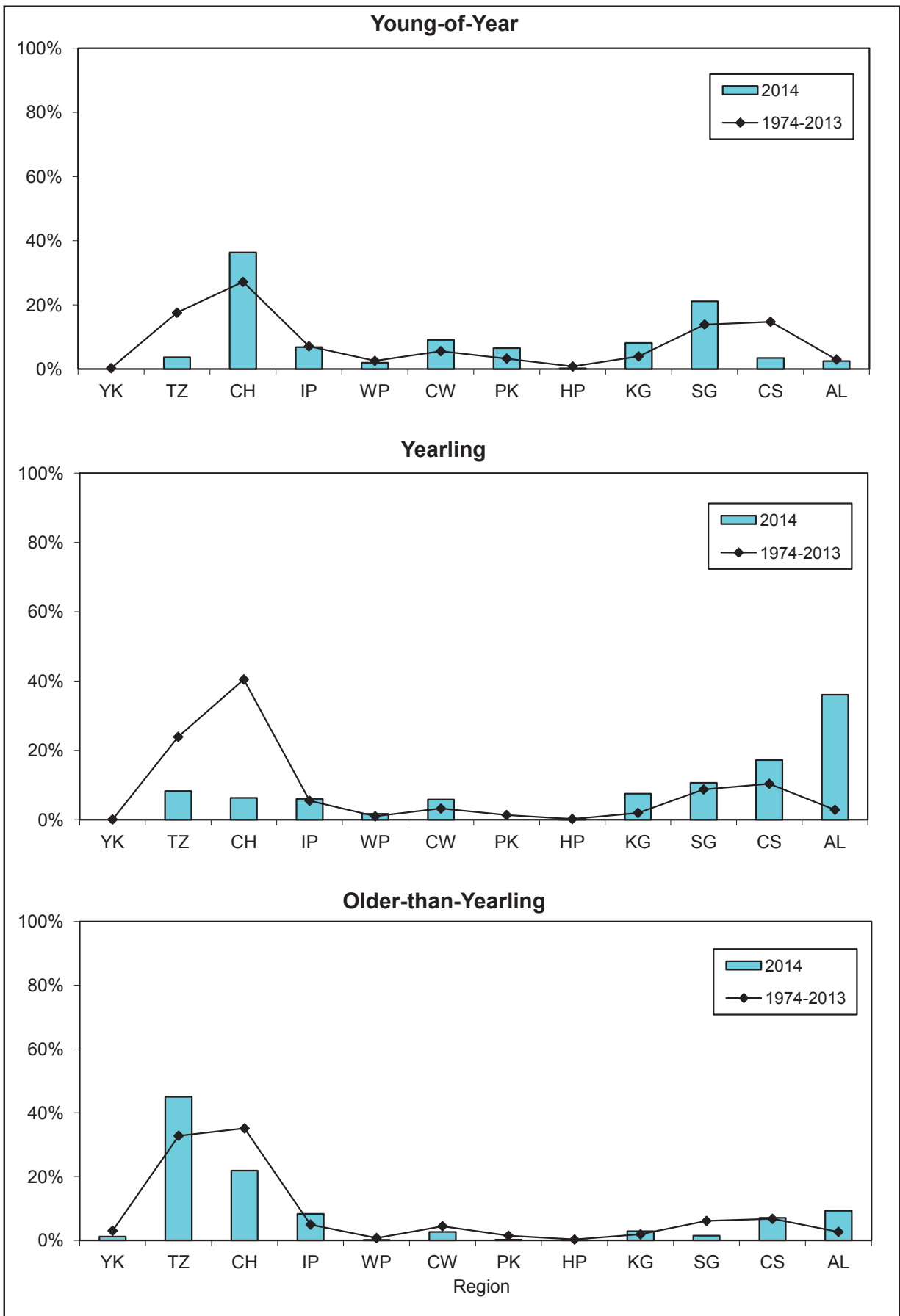


Figure 4-16. Geographic distribution indices for white perch collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

White perch

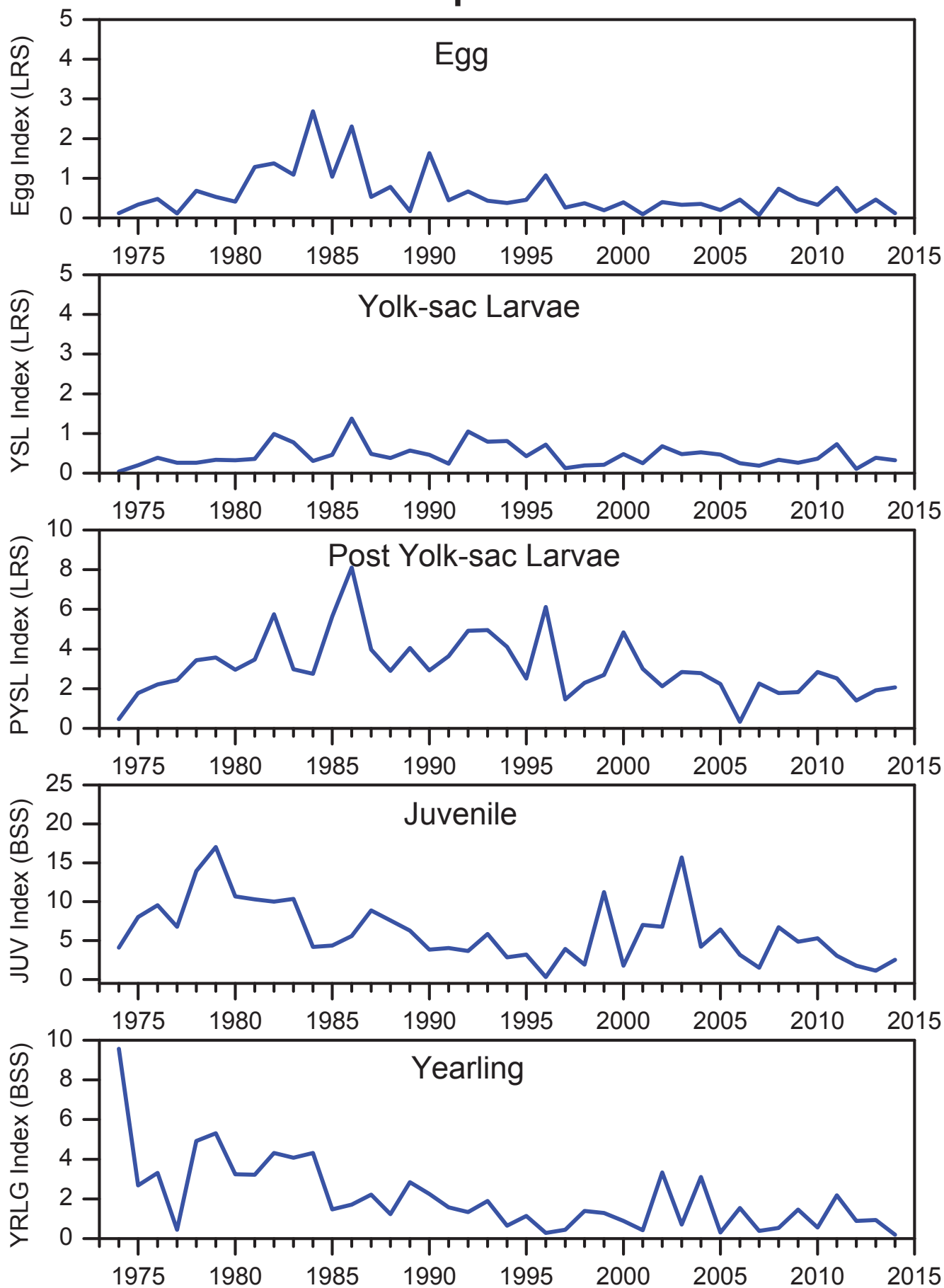


Figure 4-17. White perch indices of annual abundance based on Long River Survey and Beach Seine Survey, 1974-2014.

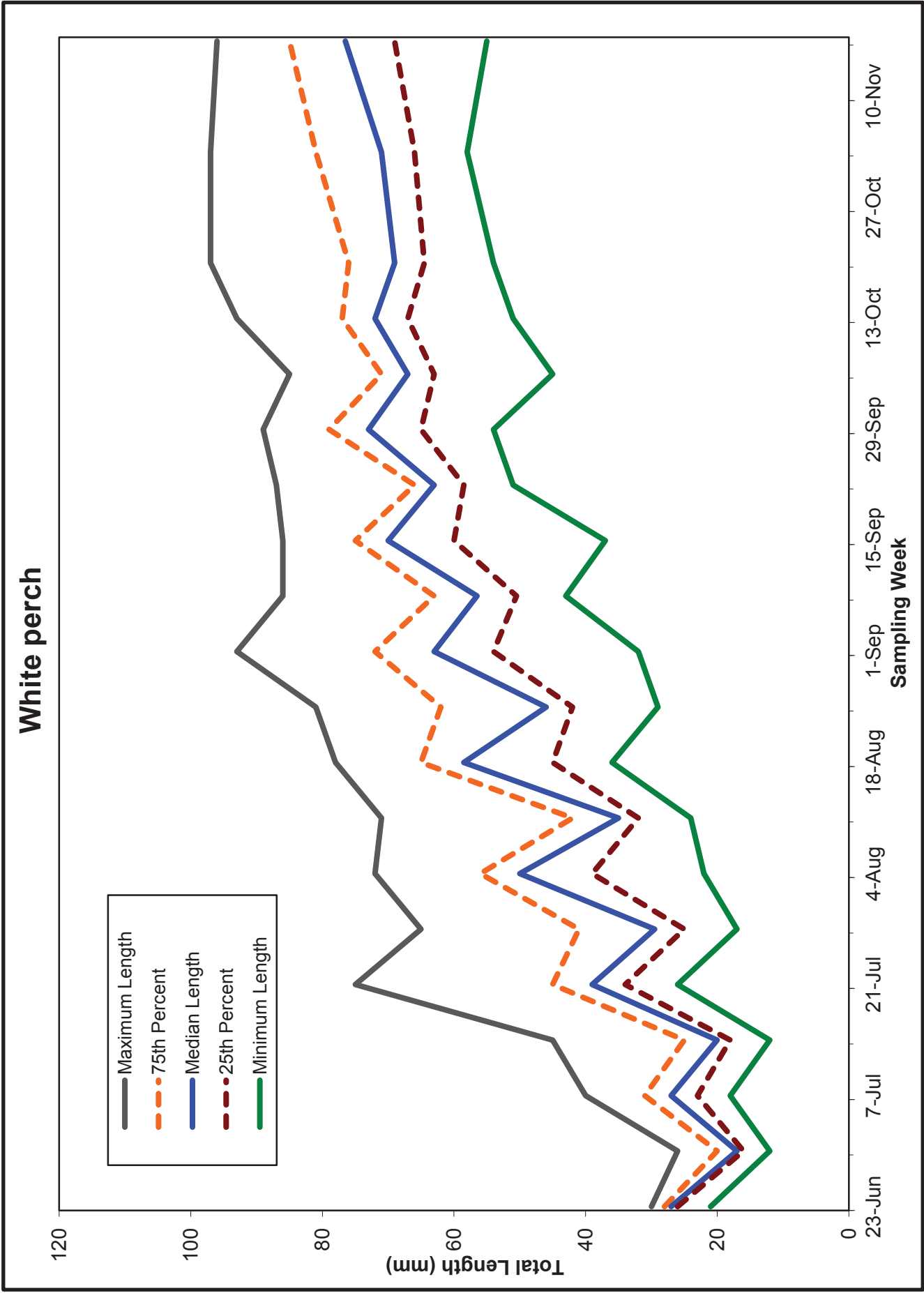


Figure 4-18. Weekly length statistics for young-of-year white perch in the Hudson River estuary, 2014.

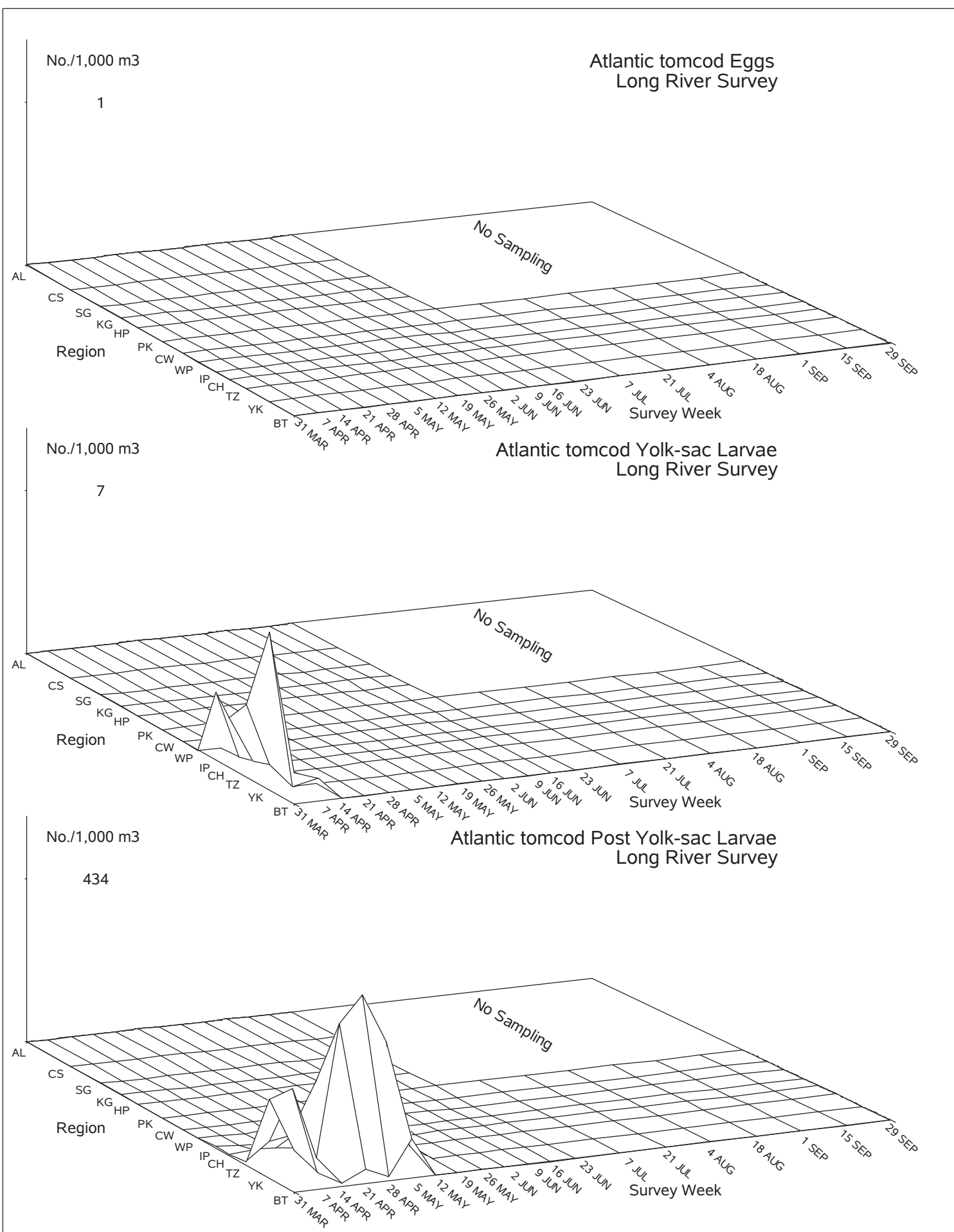


Figure 4-19. Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval Atlantic tomcod in the Hudson River estuary based on the 2014 Long River Survey.

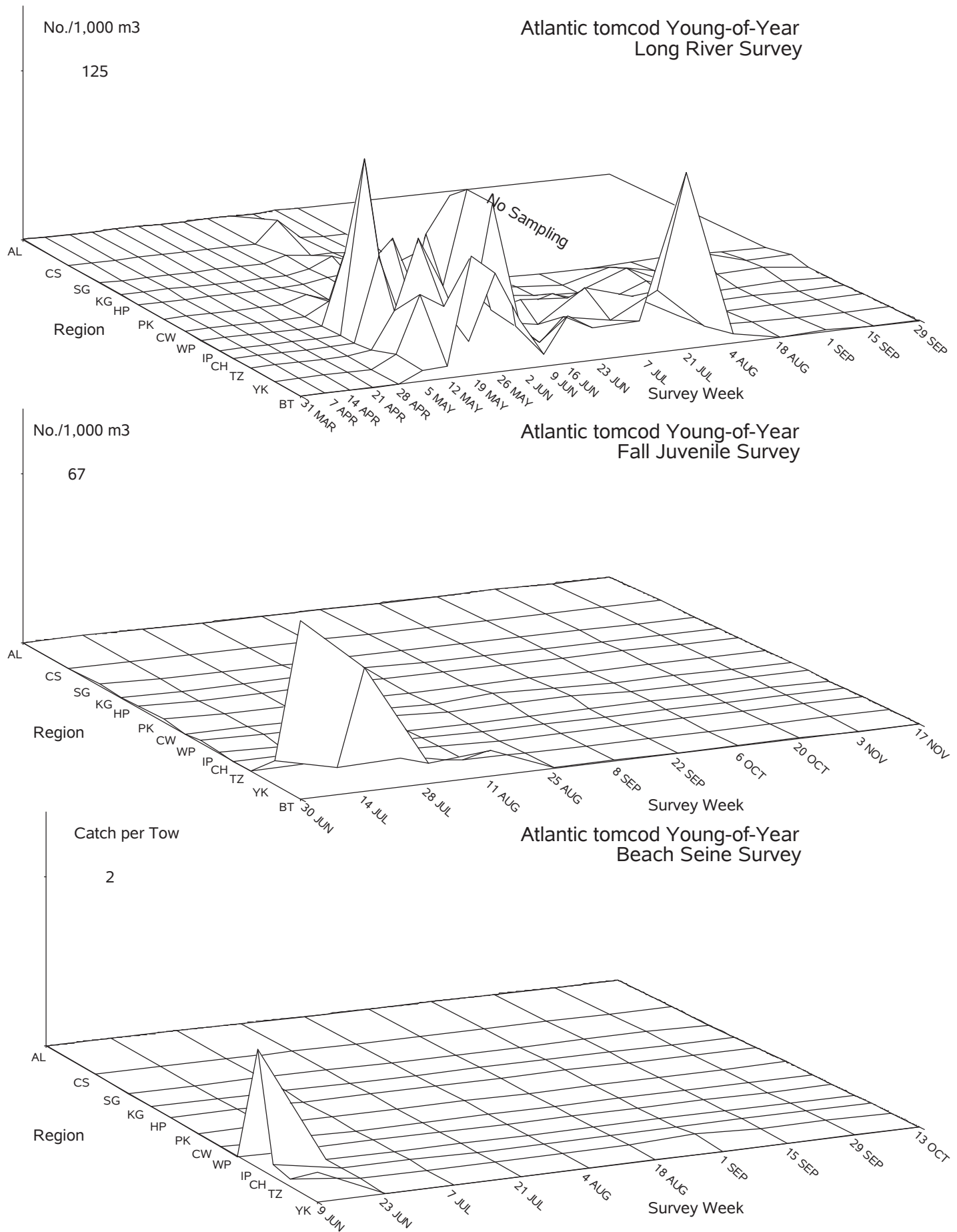


Figure 4-20. Spatiotemporal distribution of young-of-year Atlantic tomcod in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

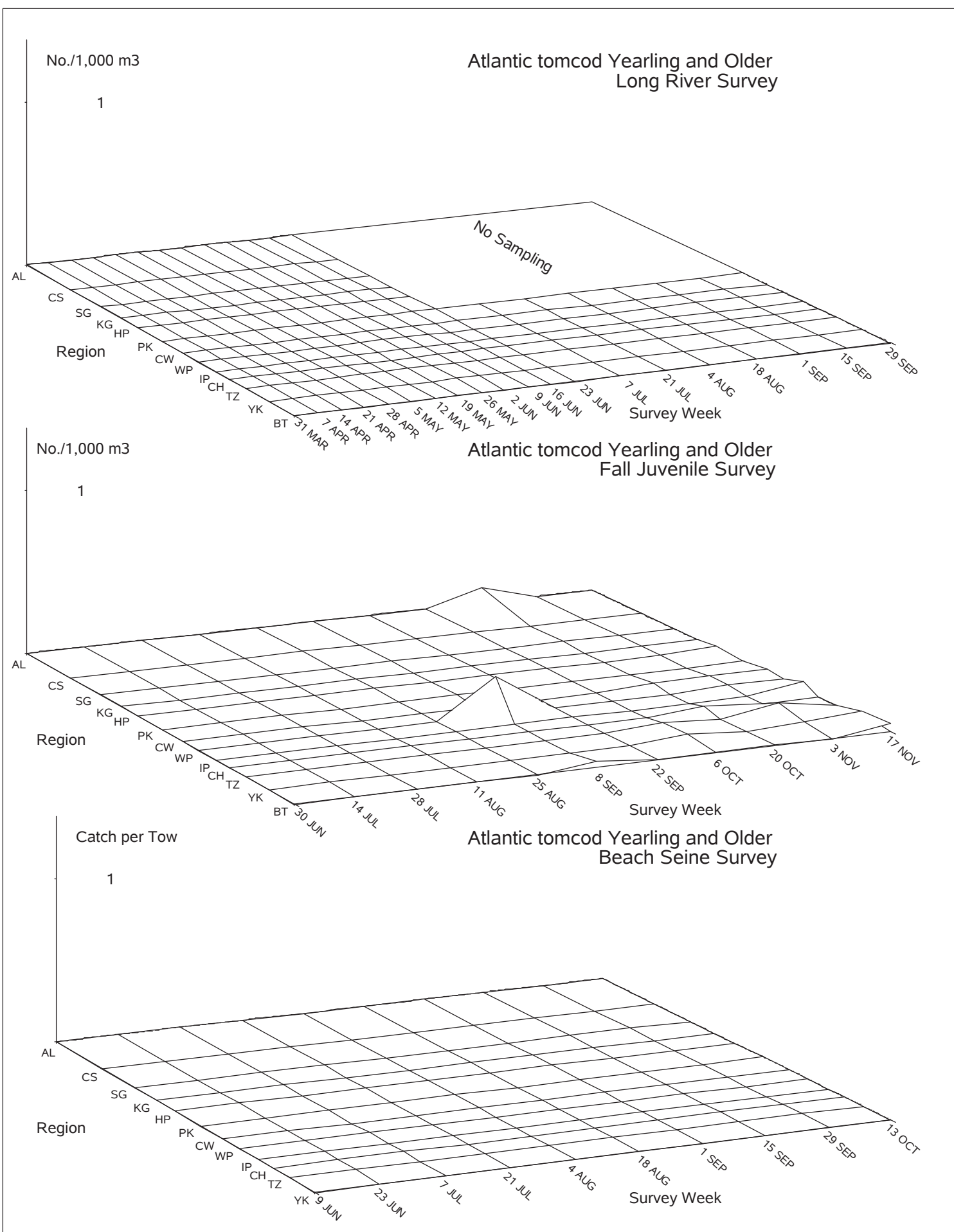


Figure 4-21. Spatiotemporal distribution of yearling and older Atlantic tomcod in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

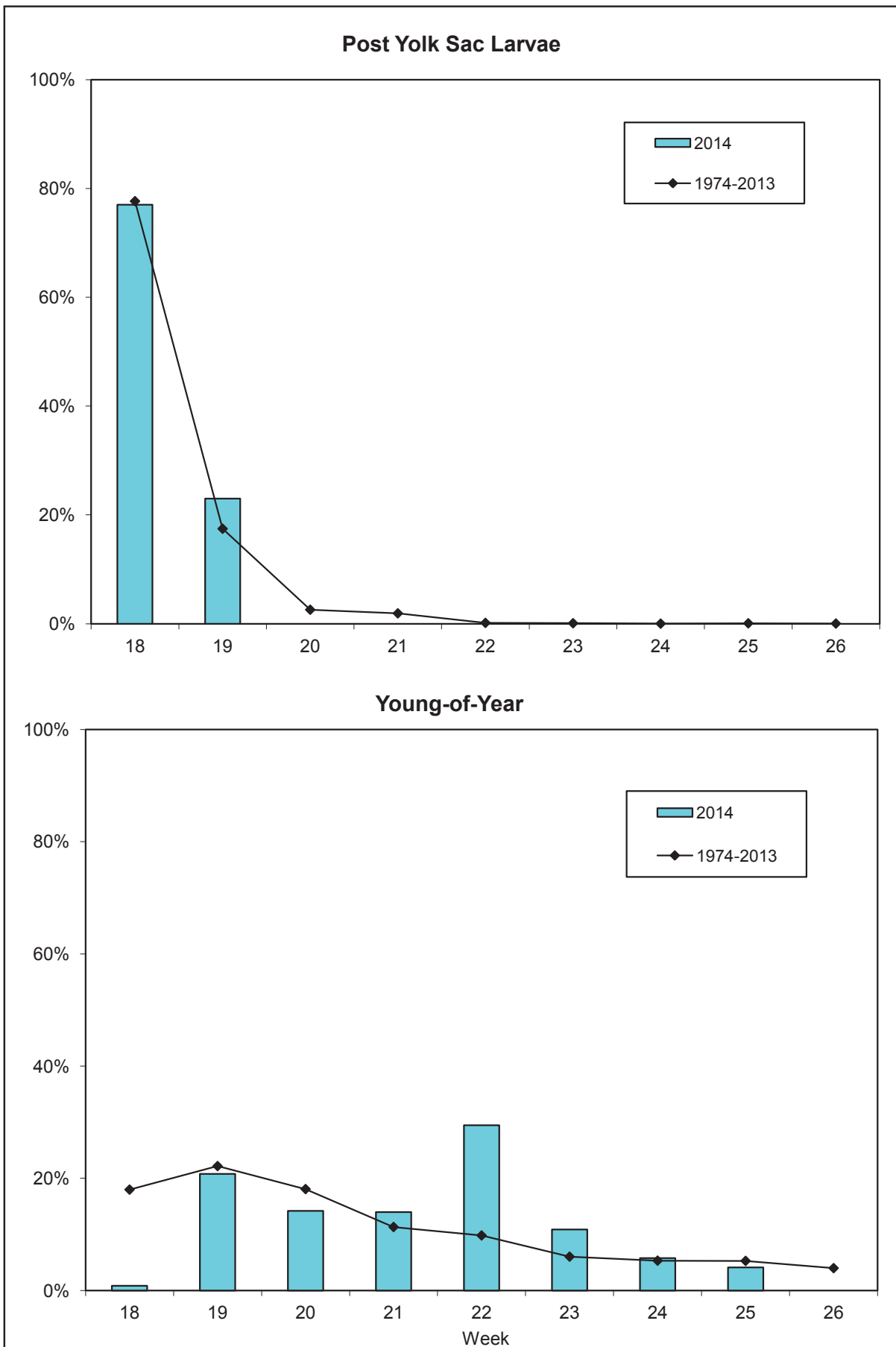


Figure 4-22. Temporal distribution indices for Atlantic tomcod collected during Long River surveys of the Hudson River estuary, 1974-2014.

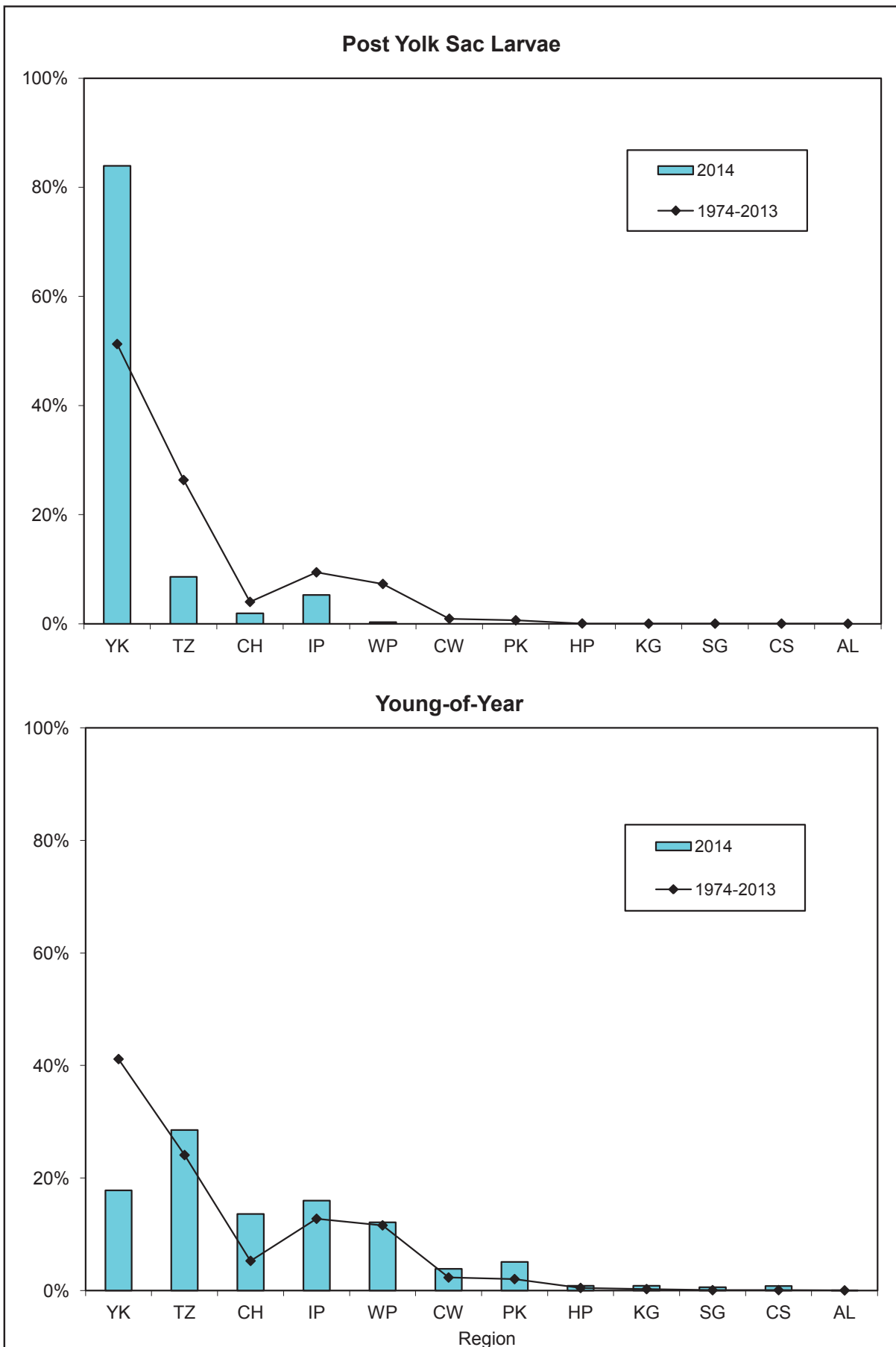


Figure 4-23. Geographic distribution indices for Atlantic tomcod collected during Long River surveys of the Hudson River estuary, 1974-2014.

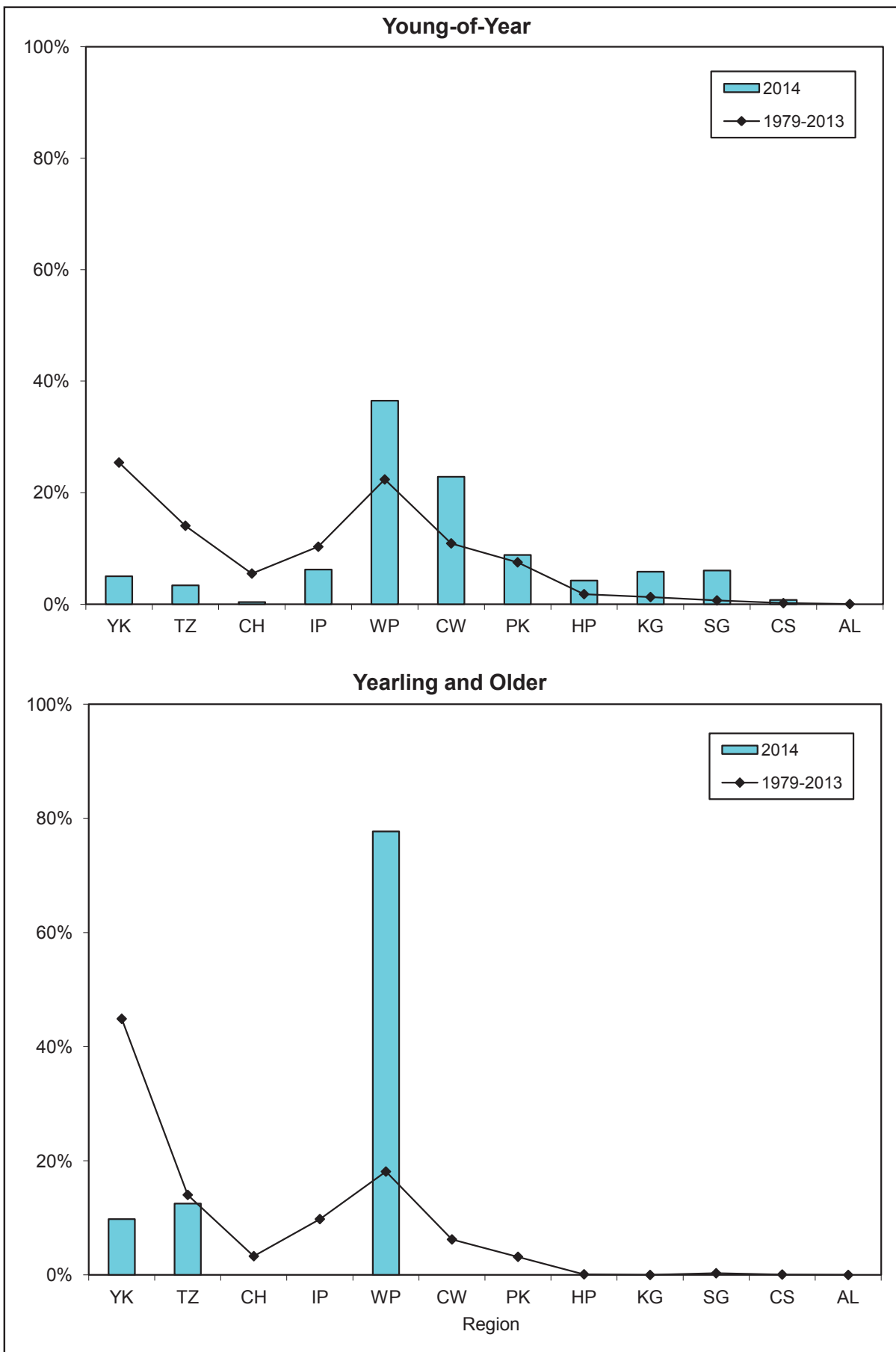


Figure 4-24. Geographic distribution indices for Atlantic tomcod collected during Fall Juvenile surveys of the Hudson River estuary, 1979-2014.

Atlantic tomcod

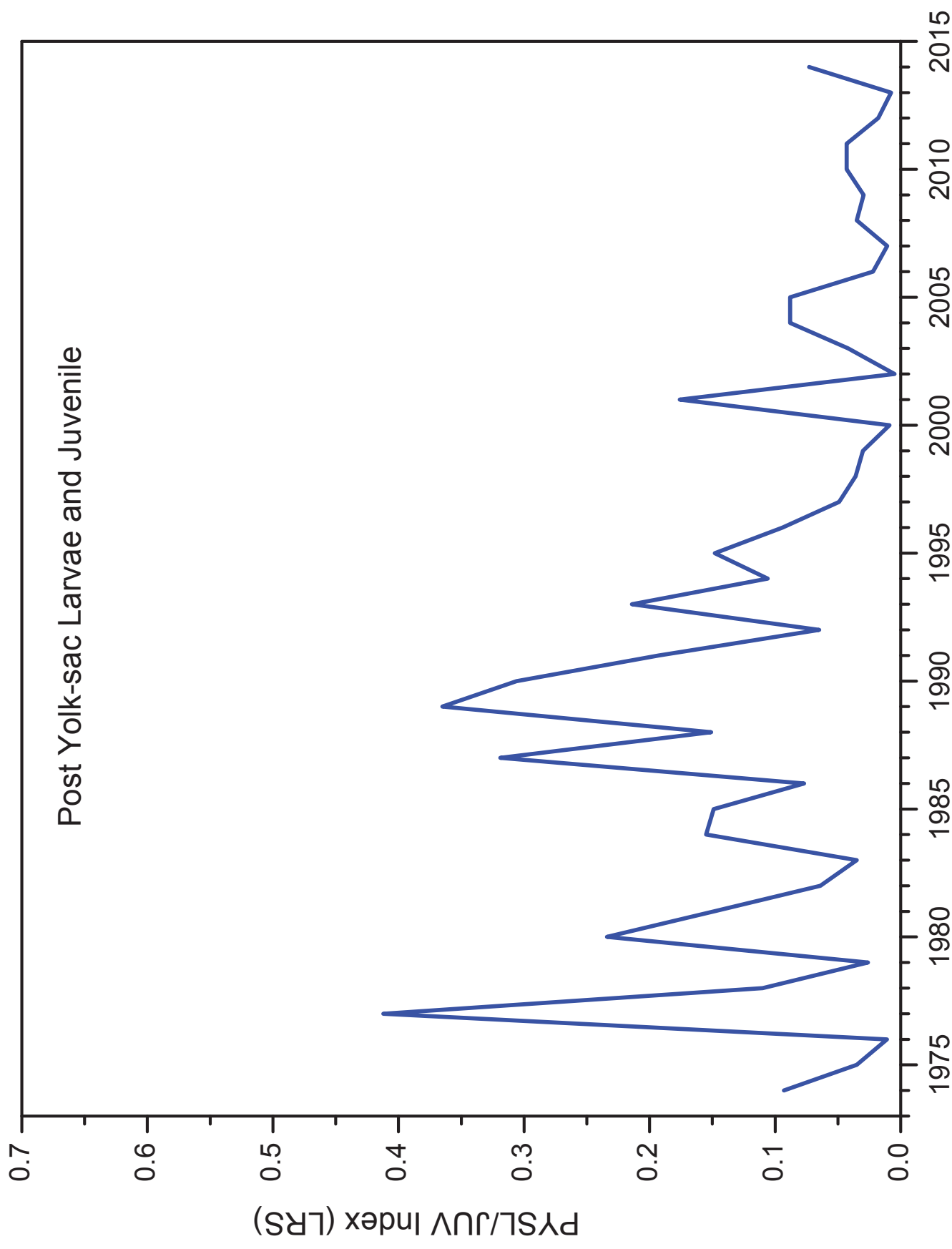


Figure 4-25. Atlantic tomcod indices of annual abundance based on Long River Survey, 1974-2014.

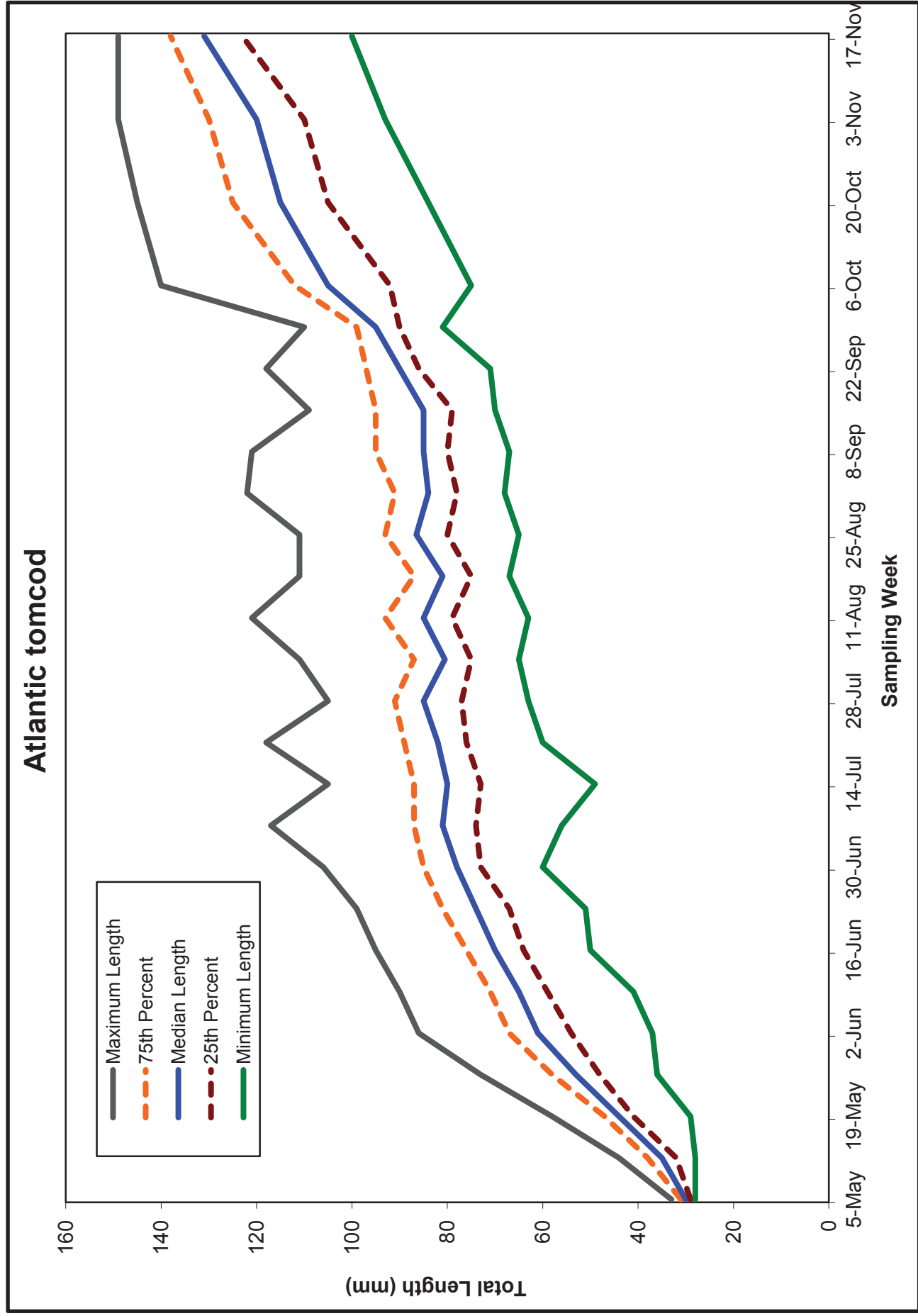


Figure 4-26. Weekly length statistics for young-of-year Atlantic tomcod in the Hudson River estuary, 2014.

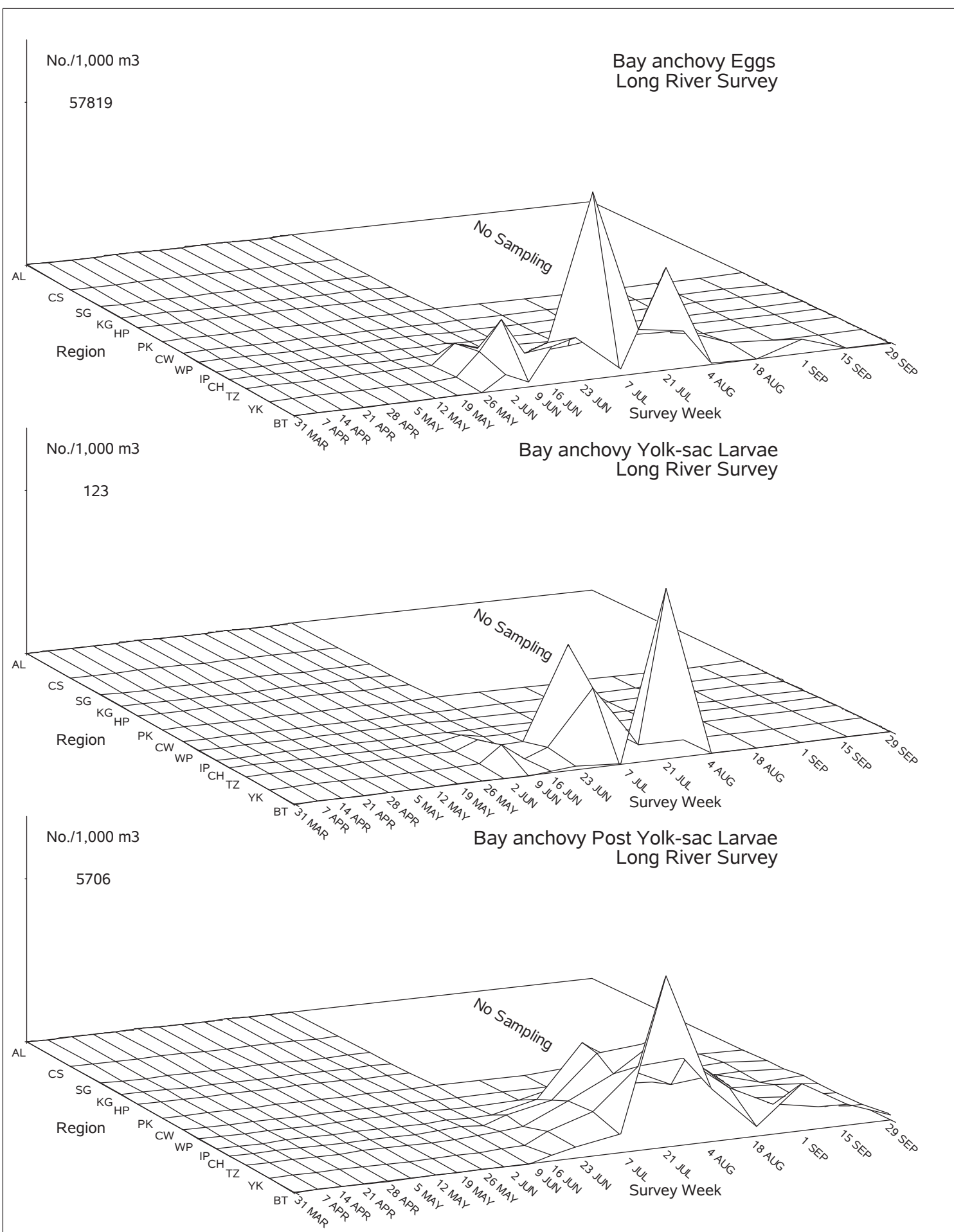


Figure 4-27. Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval bay anchovy in the Hudson River estuary based on the 2014 Long River Survey.

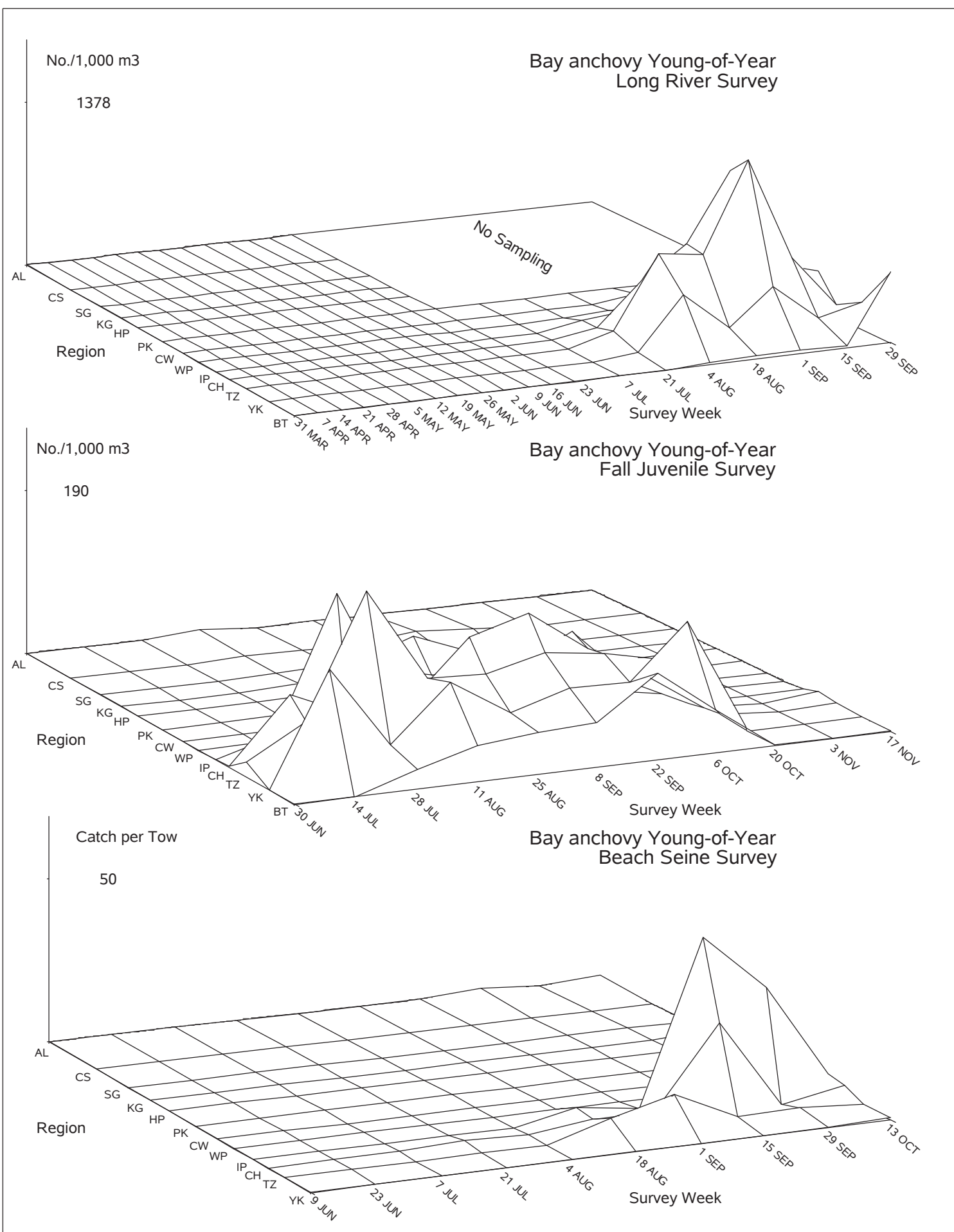


Figure 4-28. Spatiotemporal distribution of young-of-year bay anchovy in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

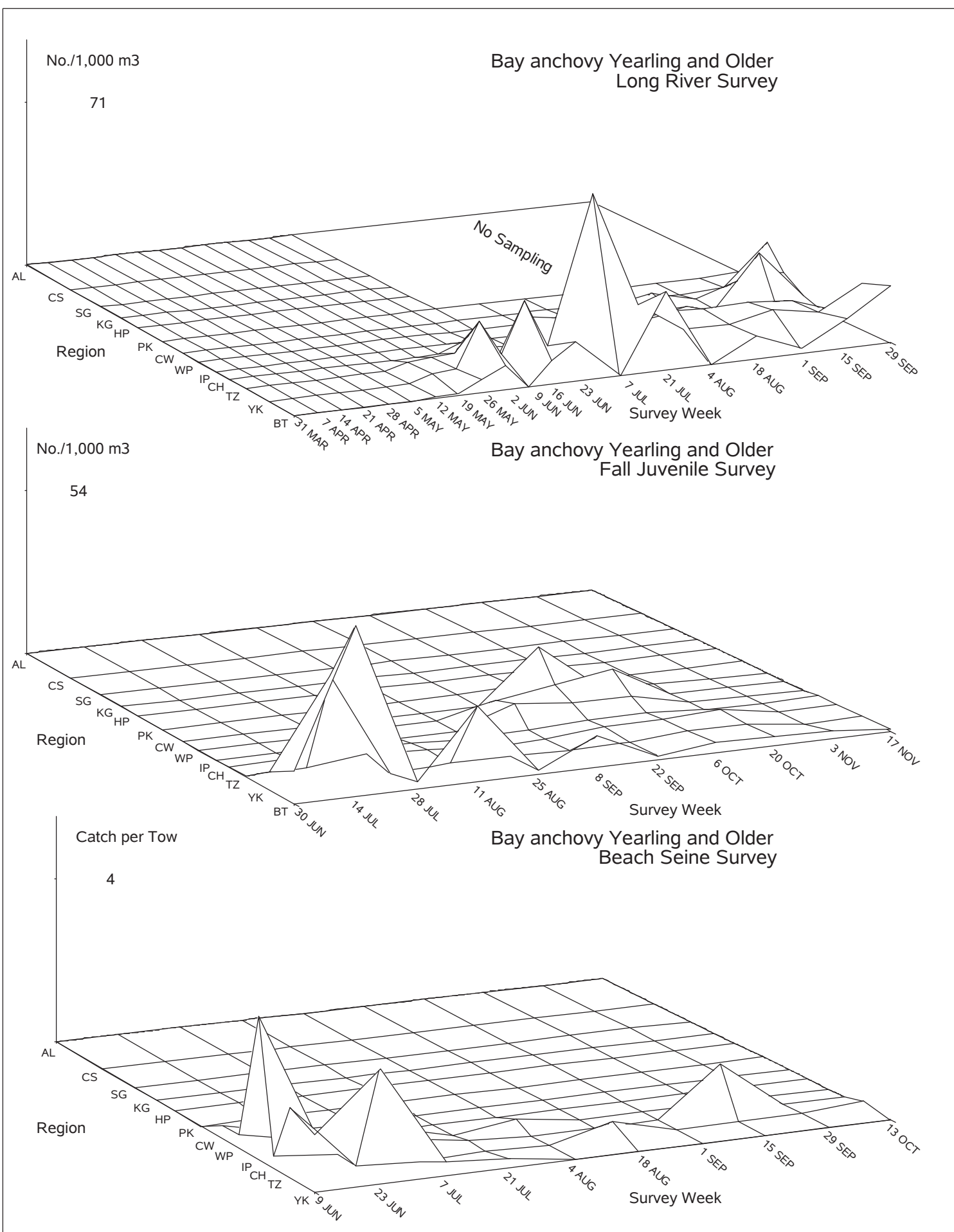


Figure 4-29. Spatiotemporal distribution of yearling and older bay anchovy in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

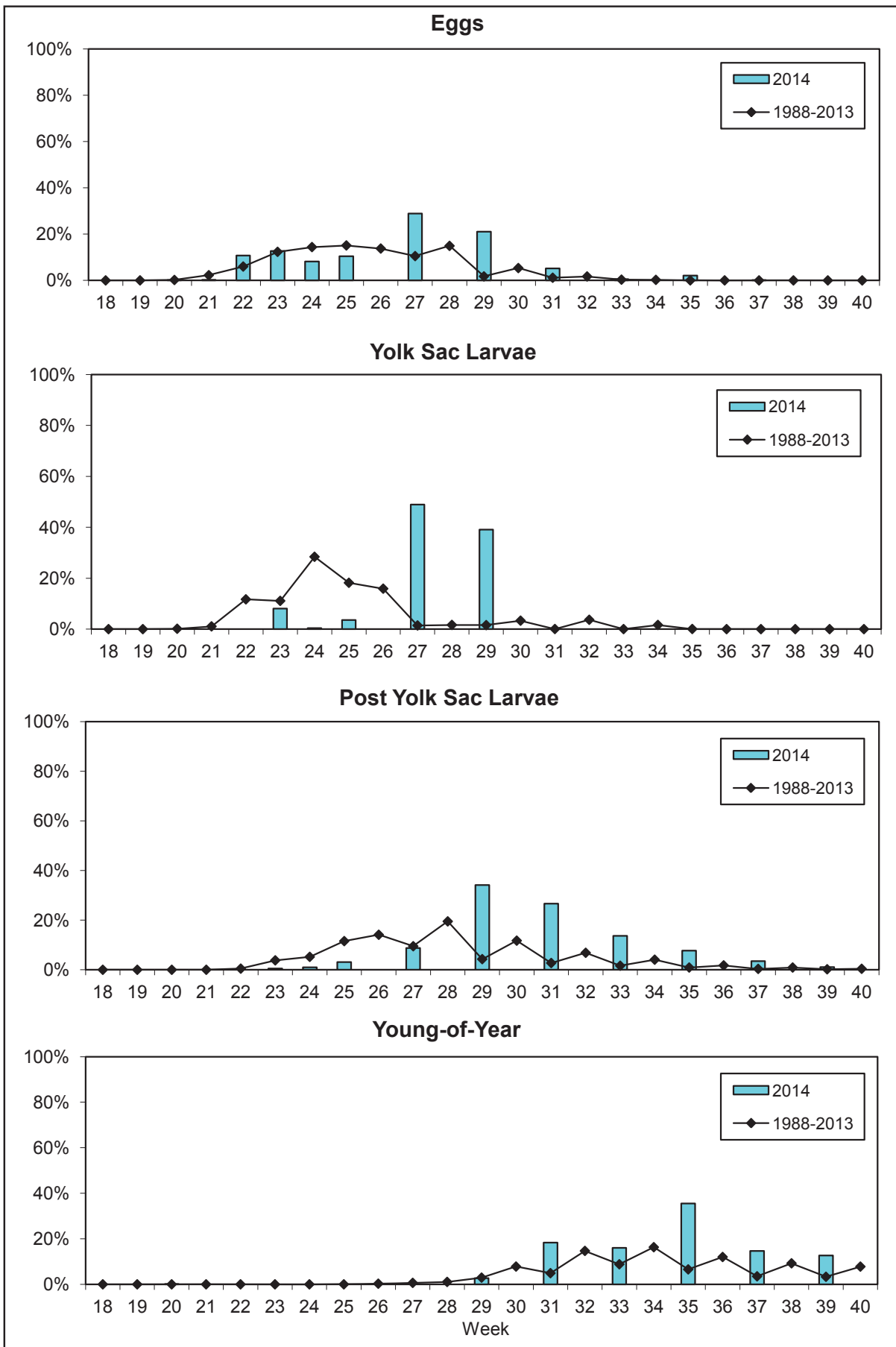


Figure 4-30. Temporal distribution indices for bay anchovy collected during Long River surveys of the Hudson River estuary, 1988-2014.

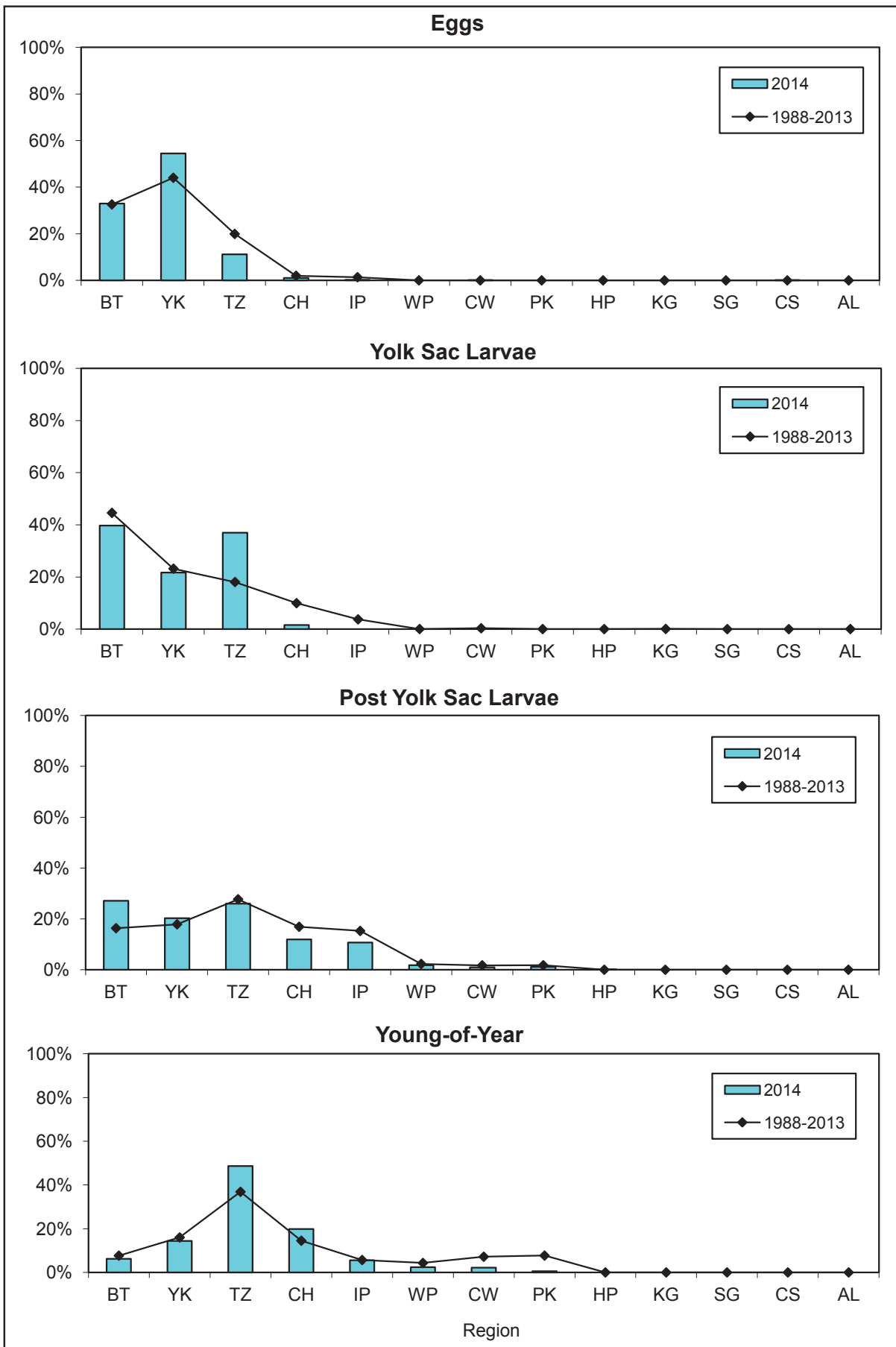


Figure 4-31. Geographic distribution indices for bay anchovy collected during Long River surveys of the Hudson River estuary, 1988-2014.

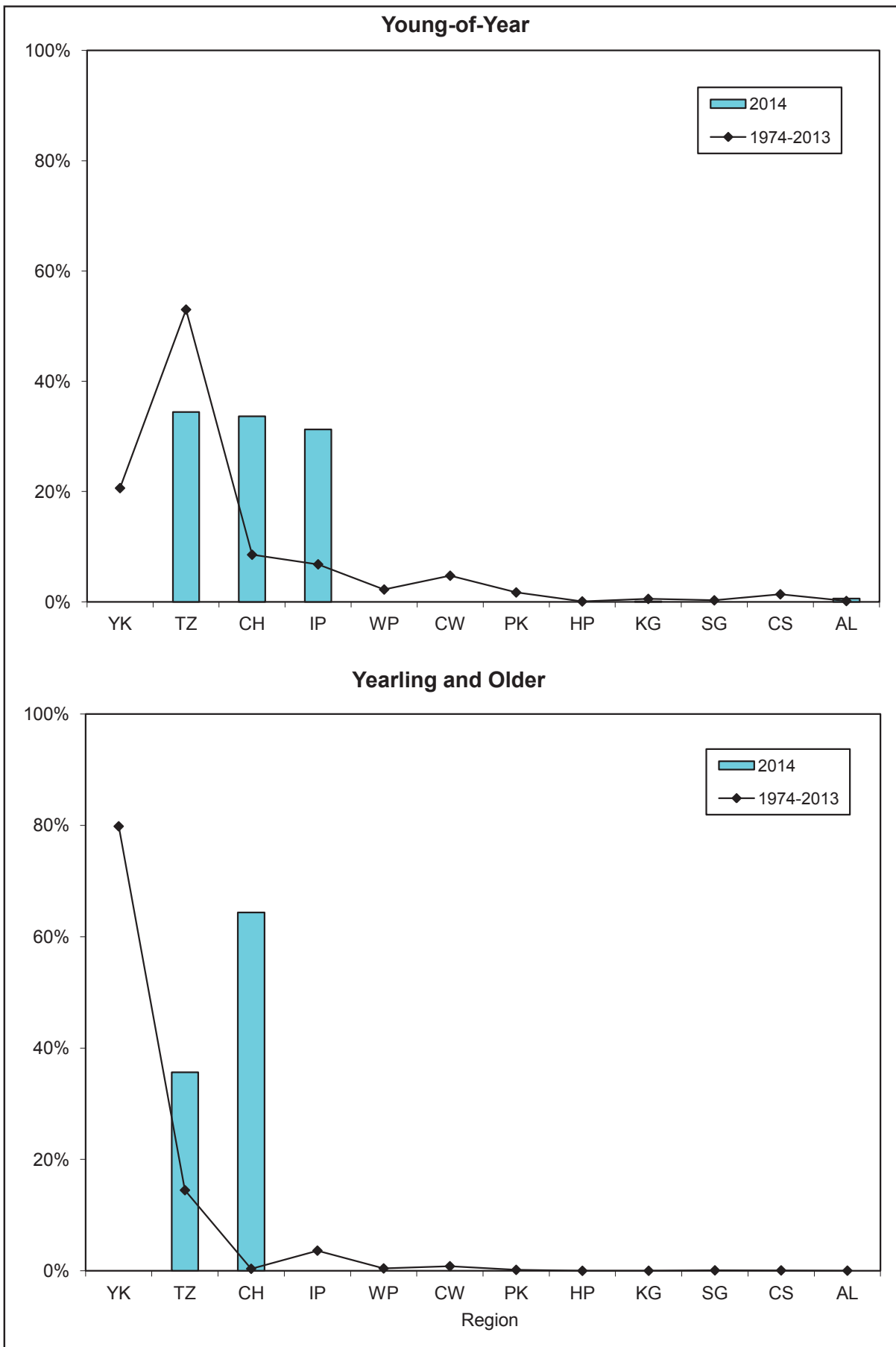


Figure 4-32. Geographic distribution indices for bay anchovy collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

Bay anchovy

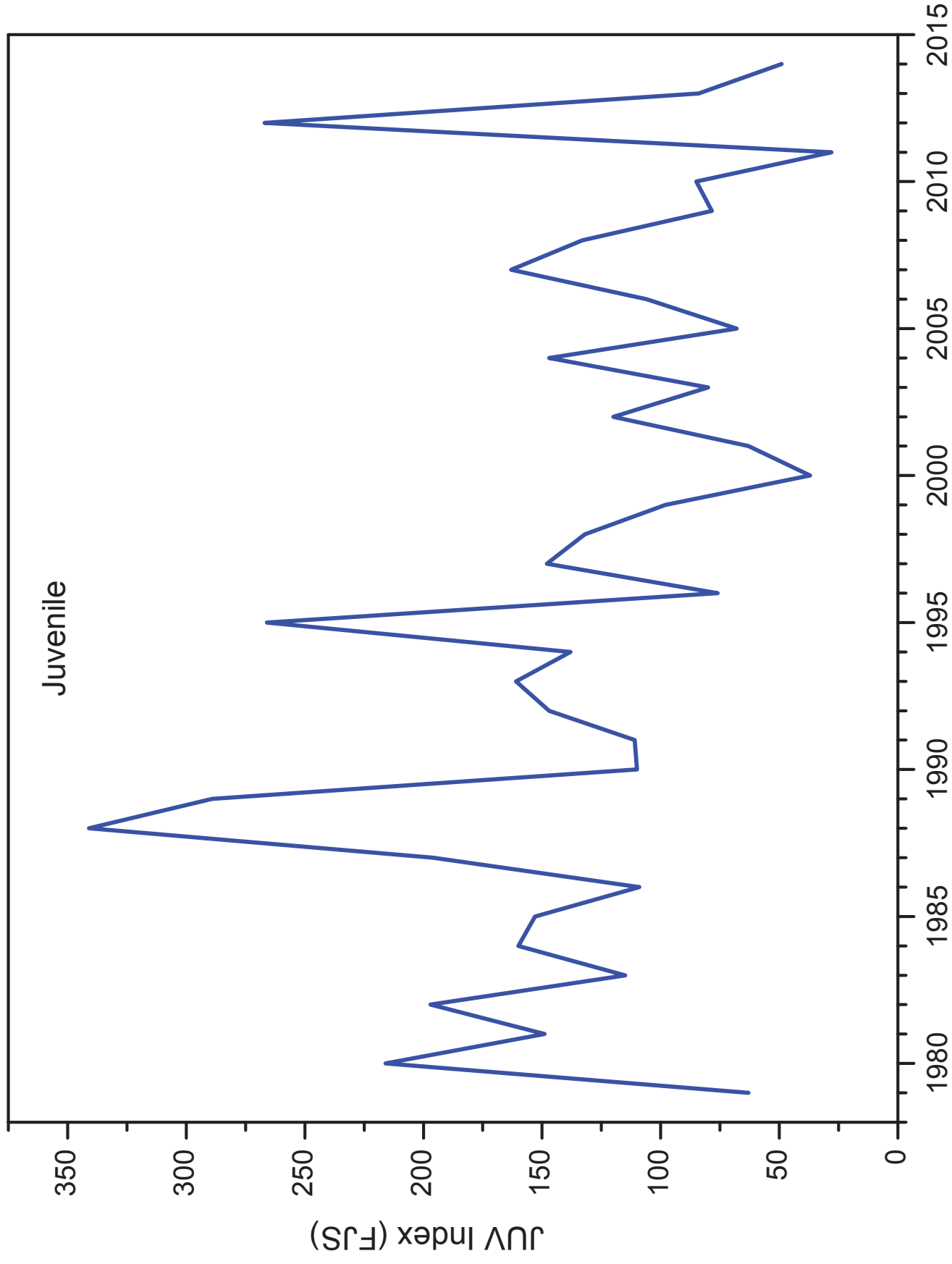


Figure 4-33. Bay anchovy indices of annual abundance based on Fall Juvenile Survey, 1979-2014.

Bay anchovy

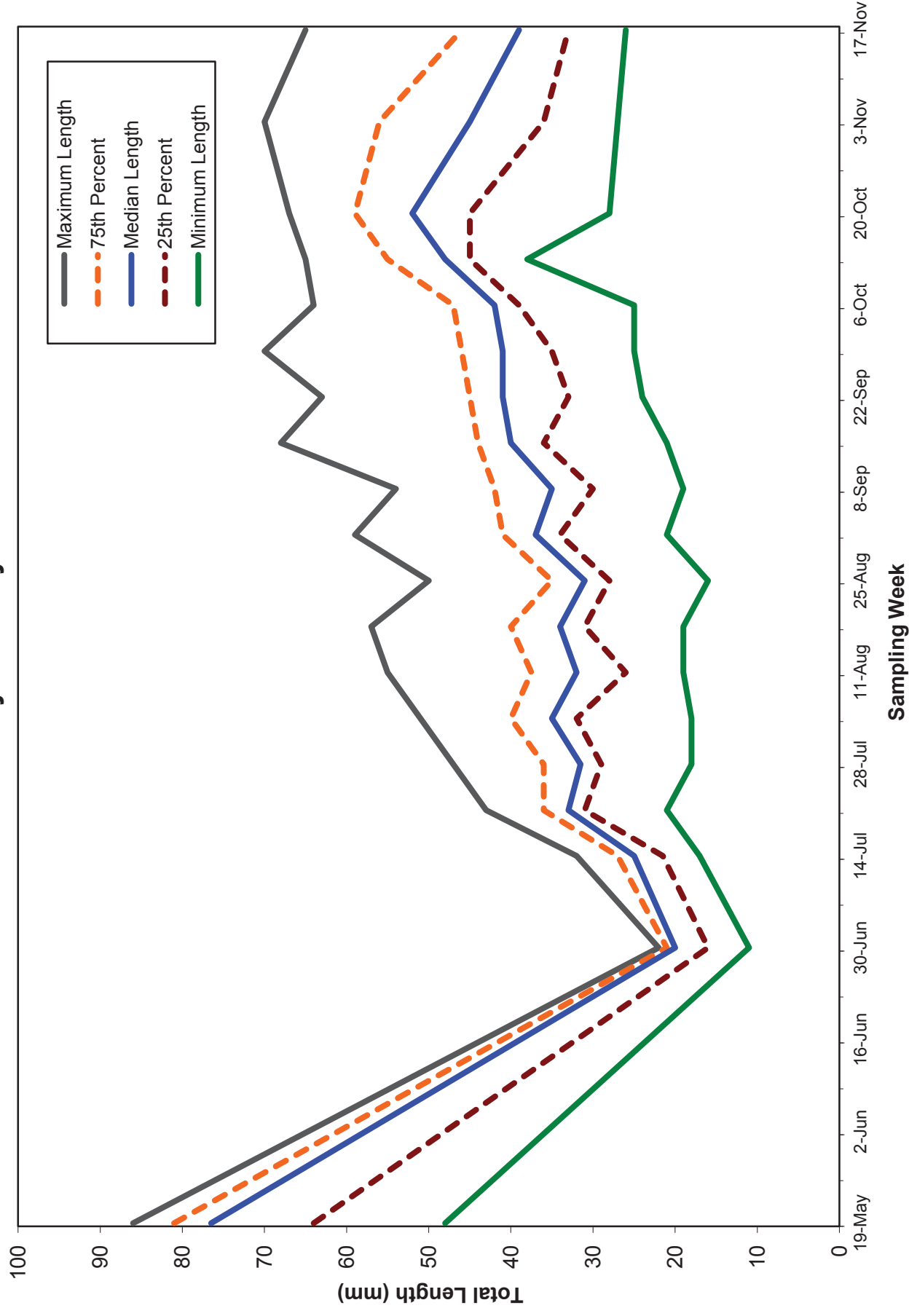


Figure 4-34. Weekly length statistics for young-of-year bay anchovy in the Hudson River estuary, 2014.

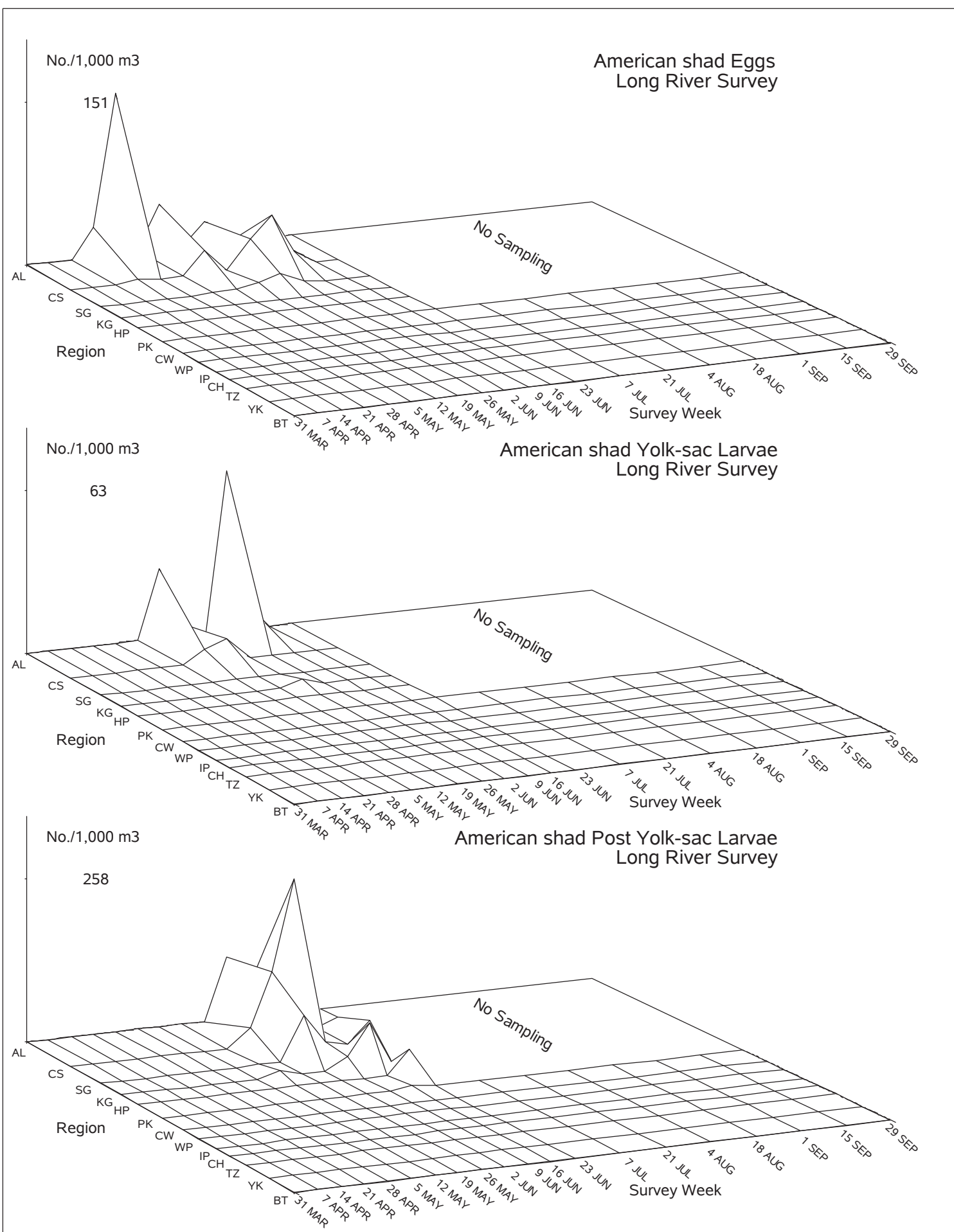


Figure 4-35. Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval American shad in the Hudson River estuary based on the 2014 Long River Survey.

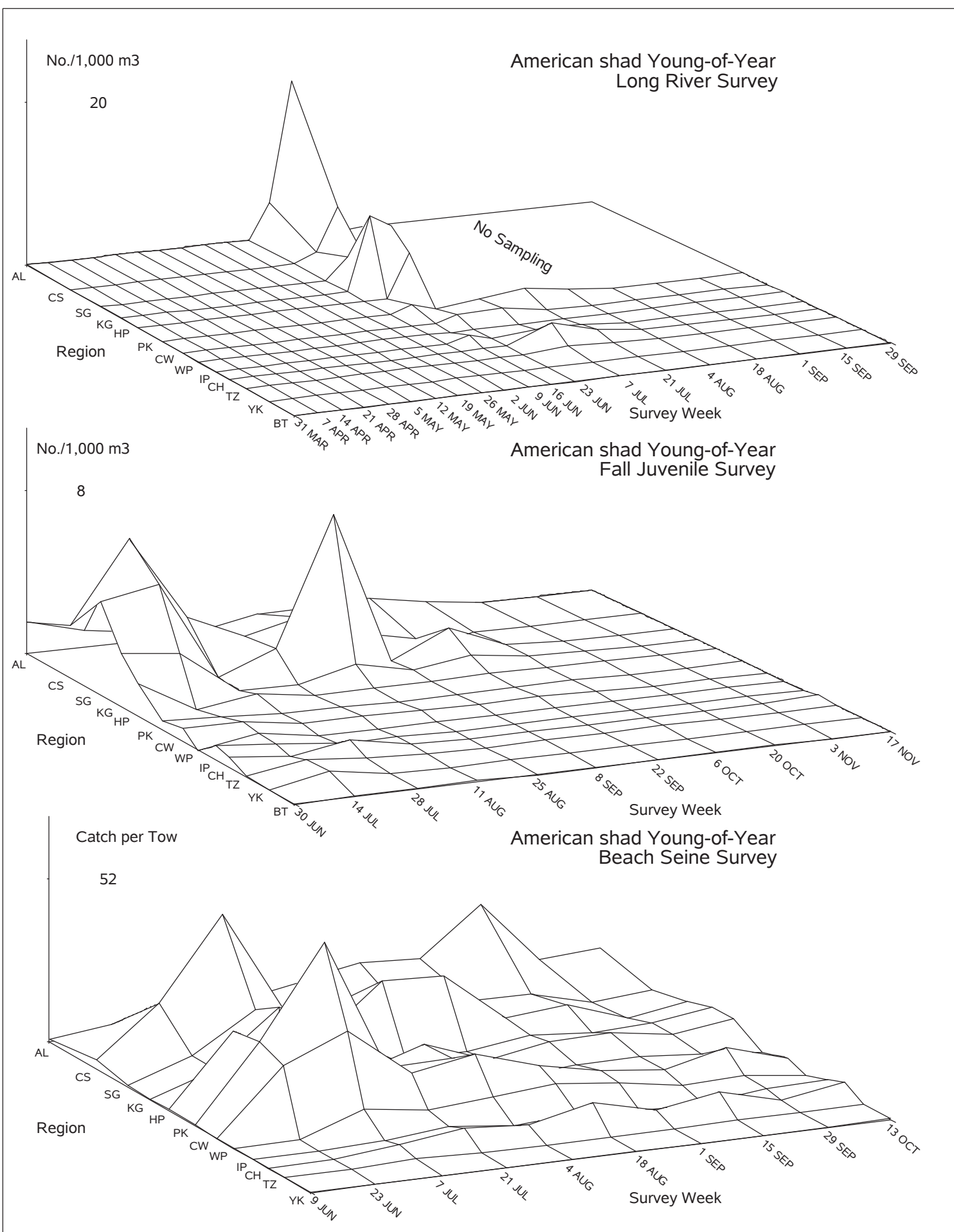


Figure 4-36. Spatiotemporal distribution of young-of-year American shad in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

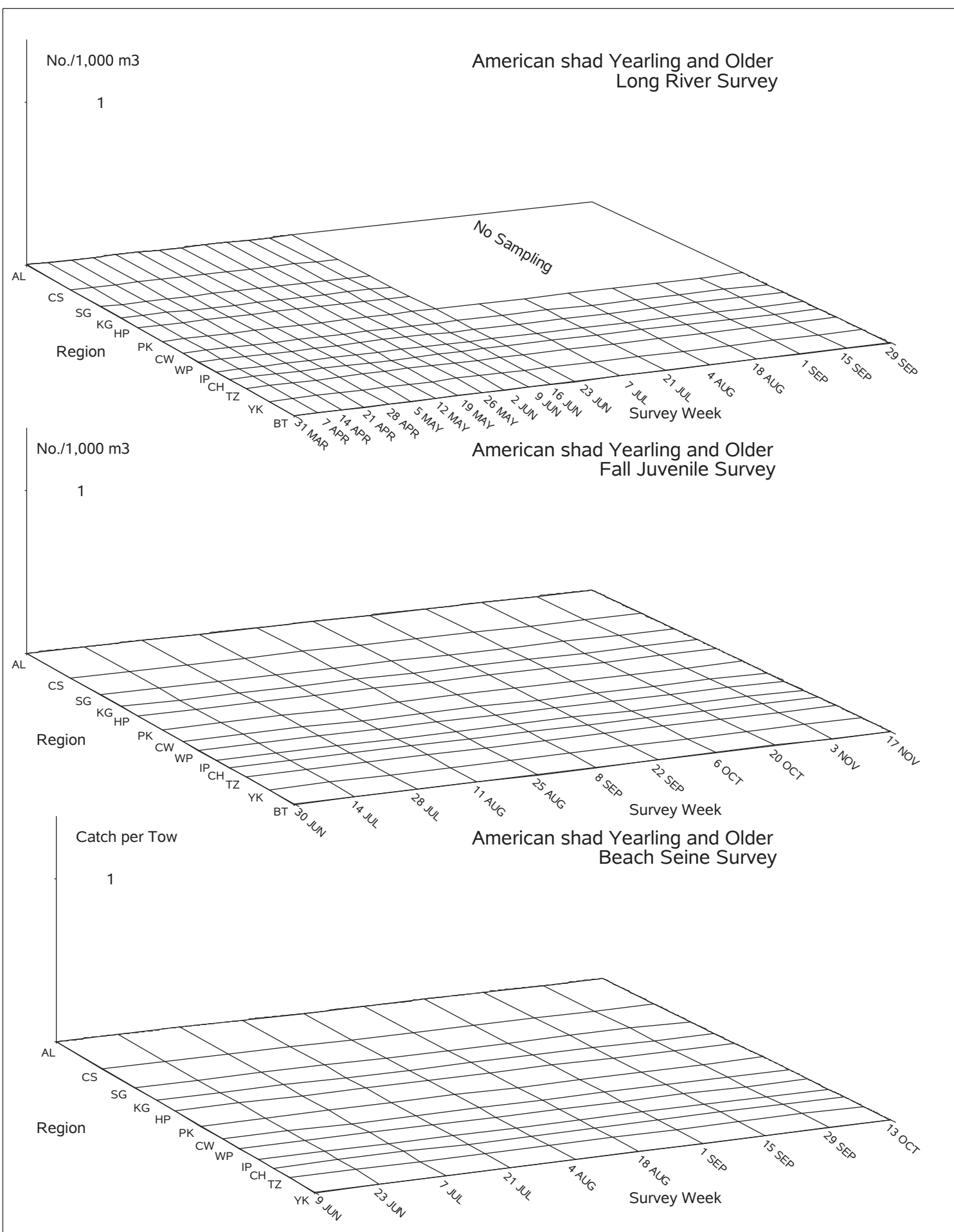


Figure 4-37. Spatiotemporal distribution of yearling and older American shad in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

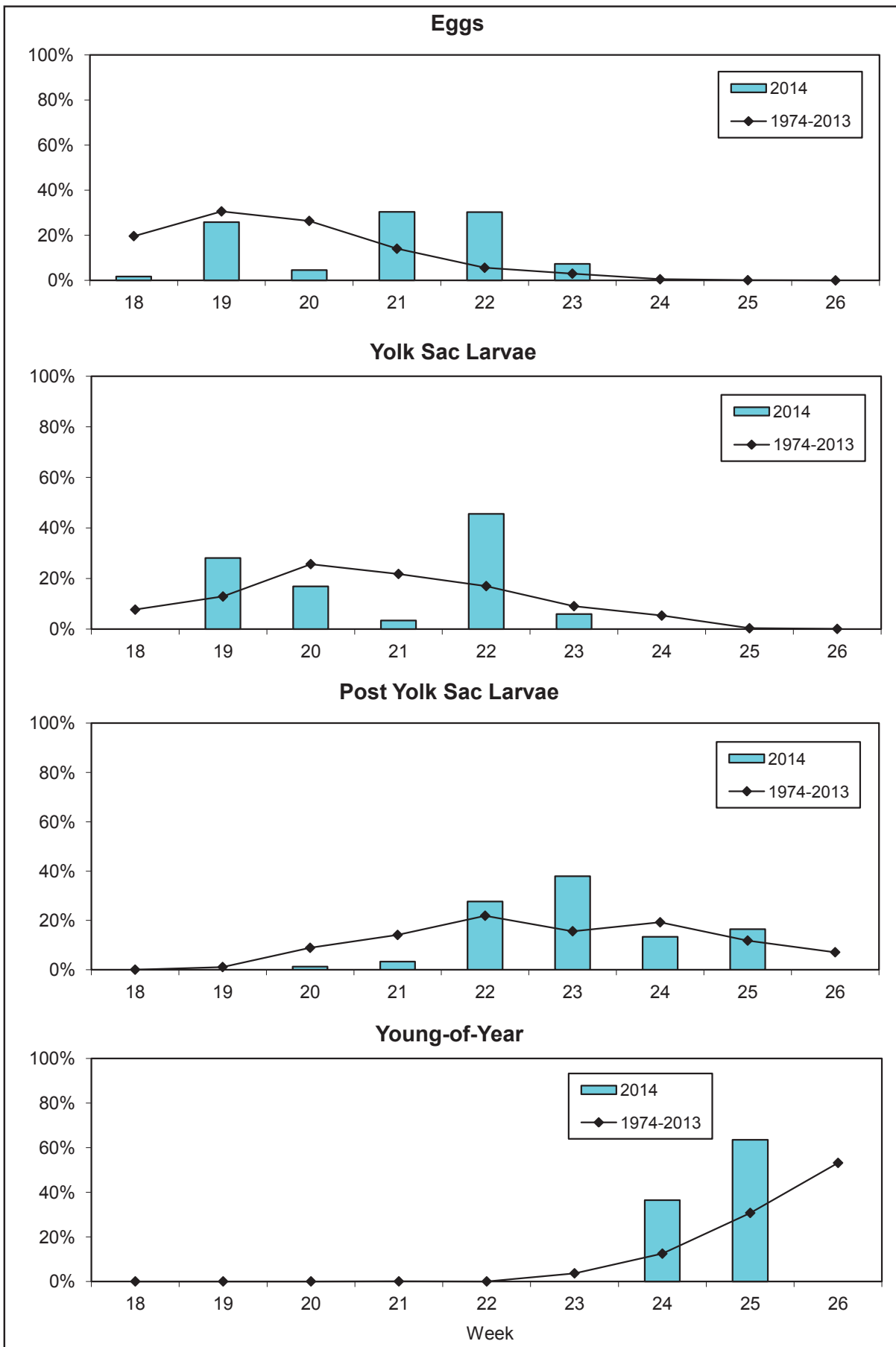


Figure 4-38. Temporal distribution indices for American shad collected during Long River surveys of the Hudson River estuary, 1974-2014.

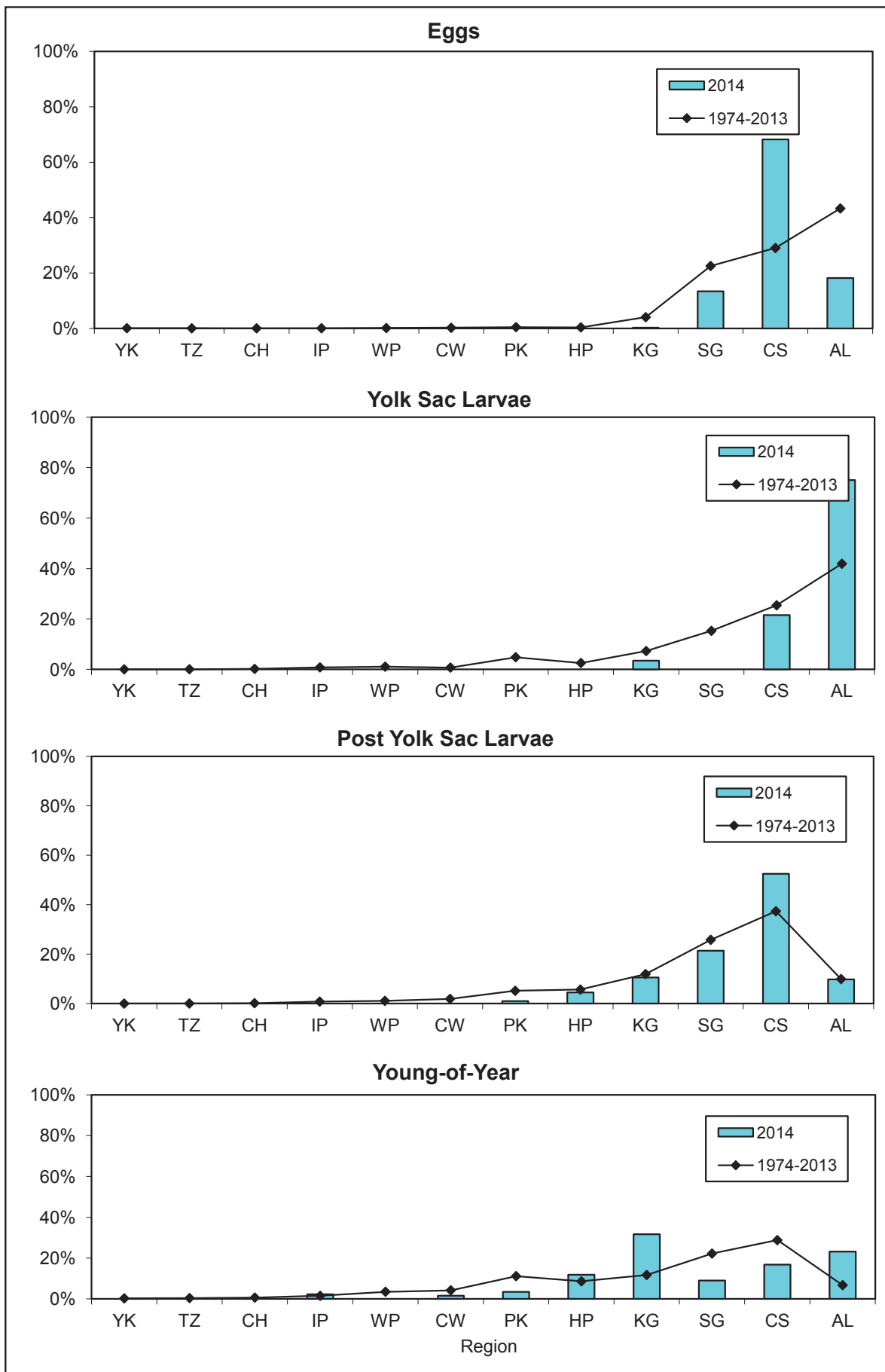


Figure 4-39. Geographic distribution indices for American shad collected during Long River surveys of the Hudson River estuary, 1974-2014.

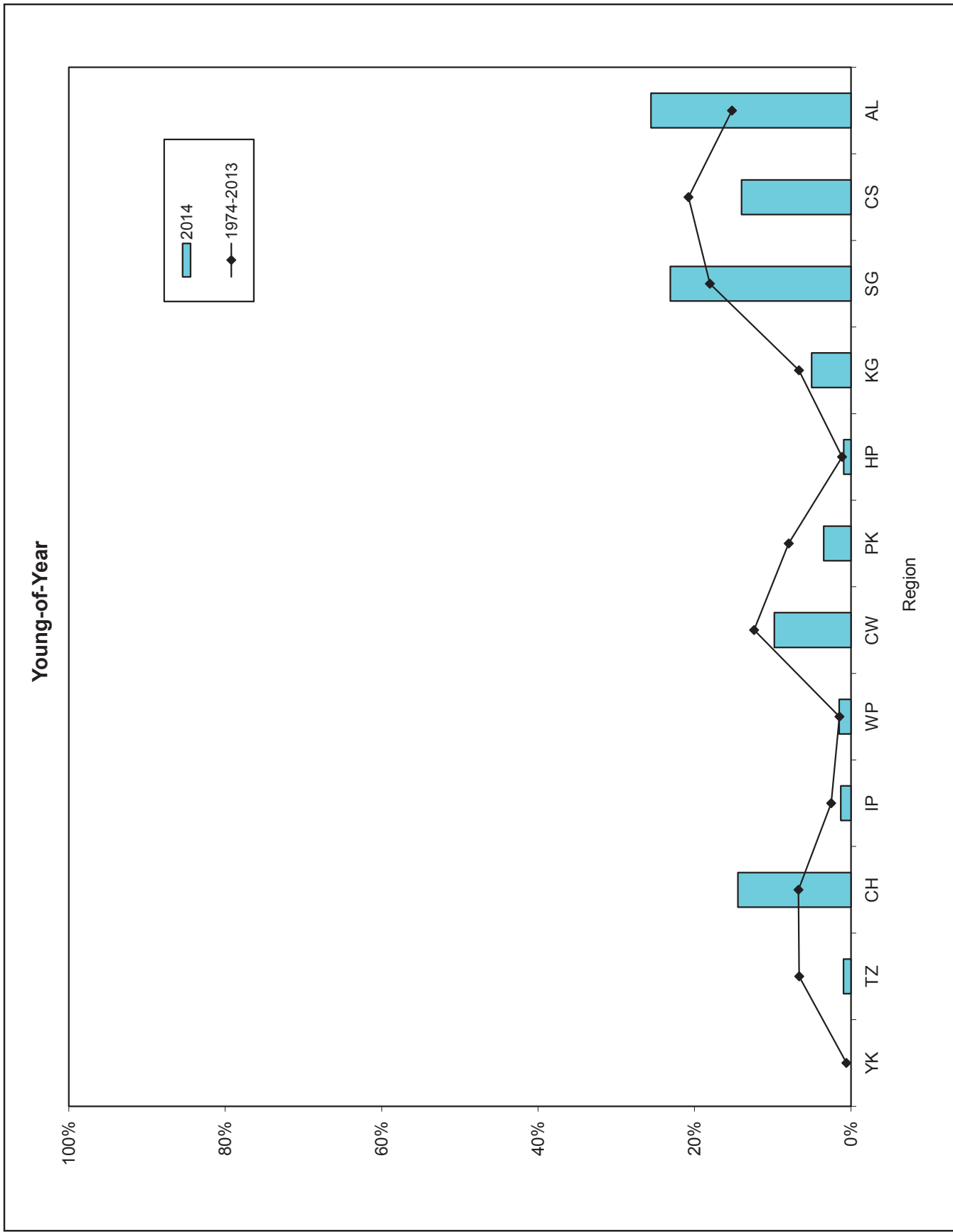


Figure 4-40. Geographic distribution indices for American shad collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

American shad

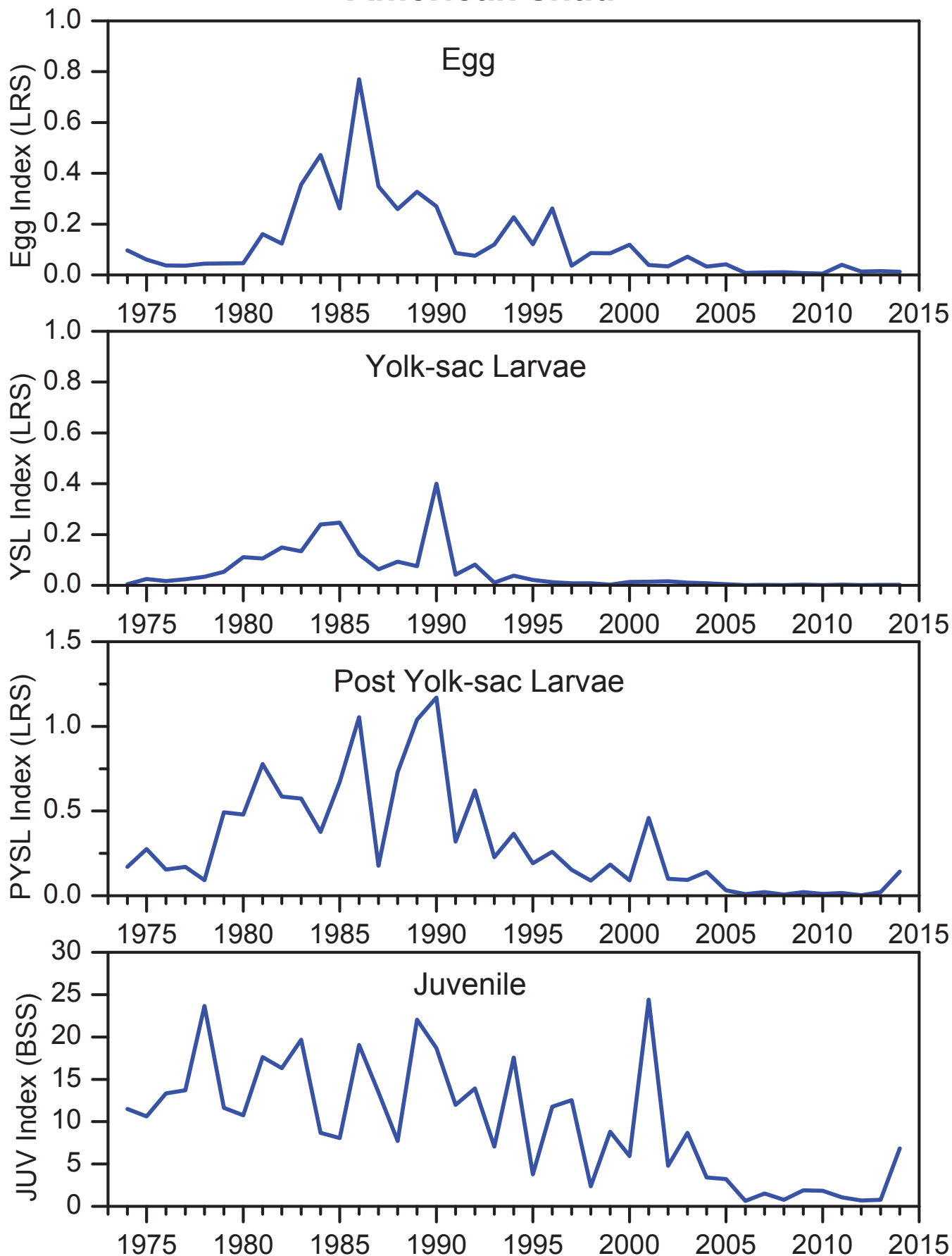


Figure 4-41. American shad indices of annual abundance based on Long River Survey and Beach Seine Survey, 1974-2014.

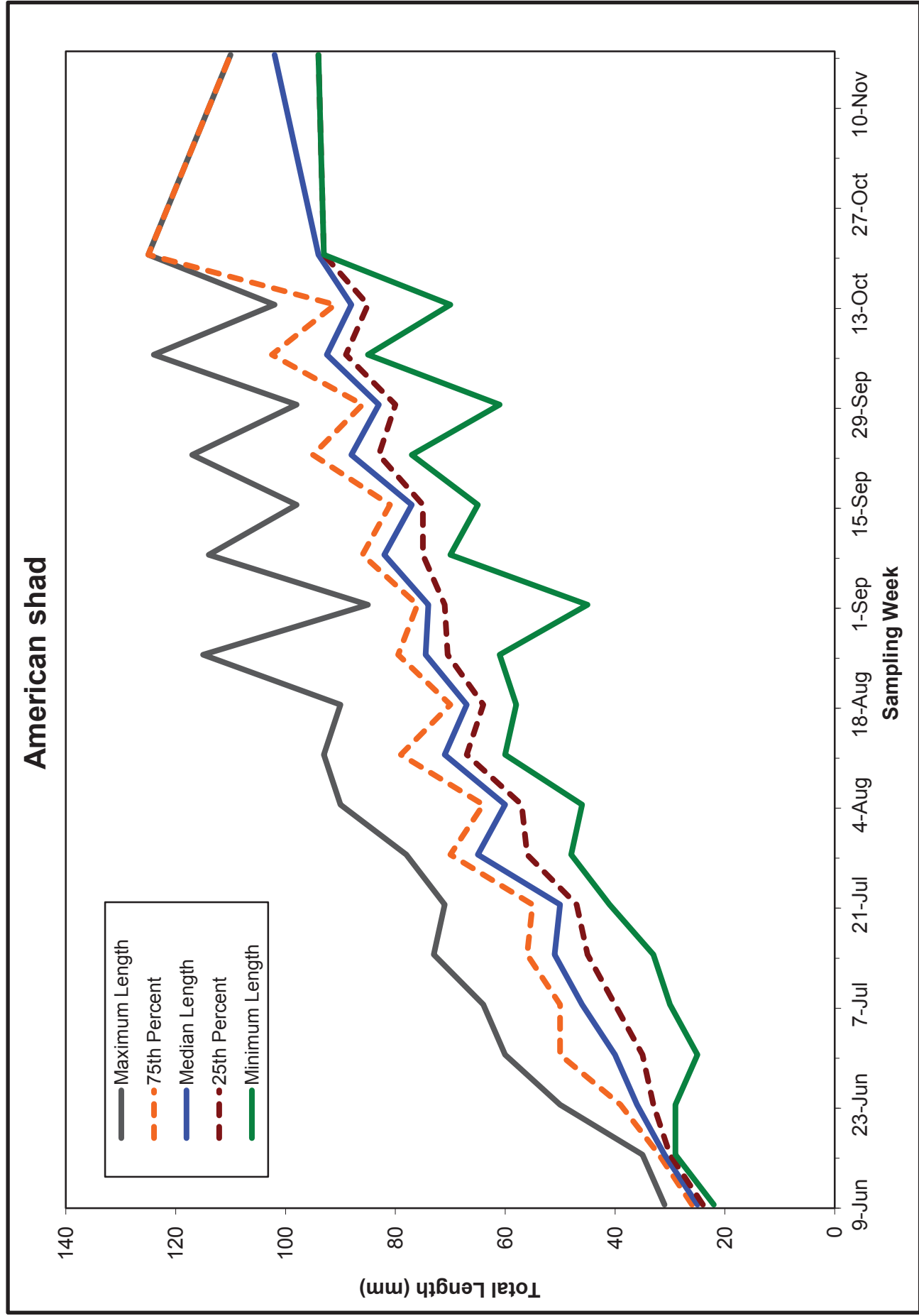


Figure 4-42. Weekly length statistics for young-of-year American shad in the Hudson River estuary, 2014.

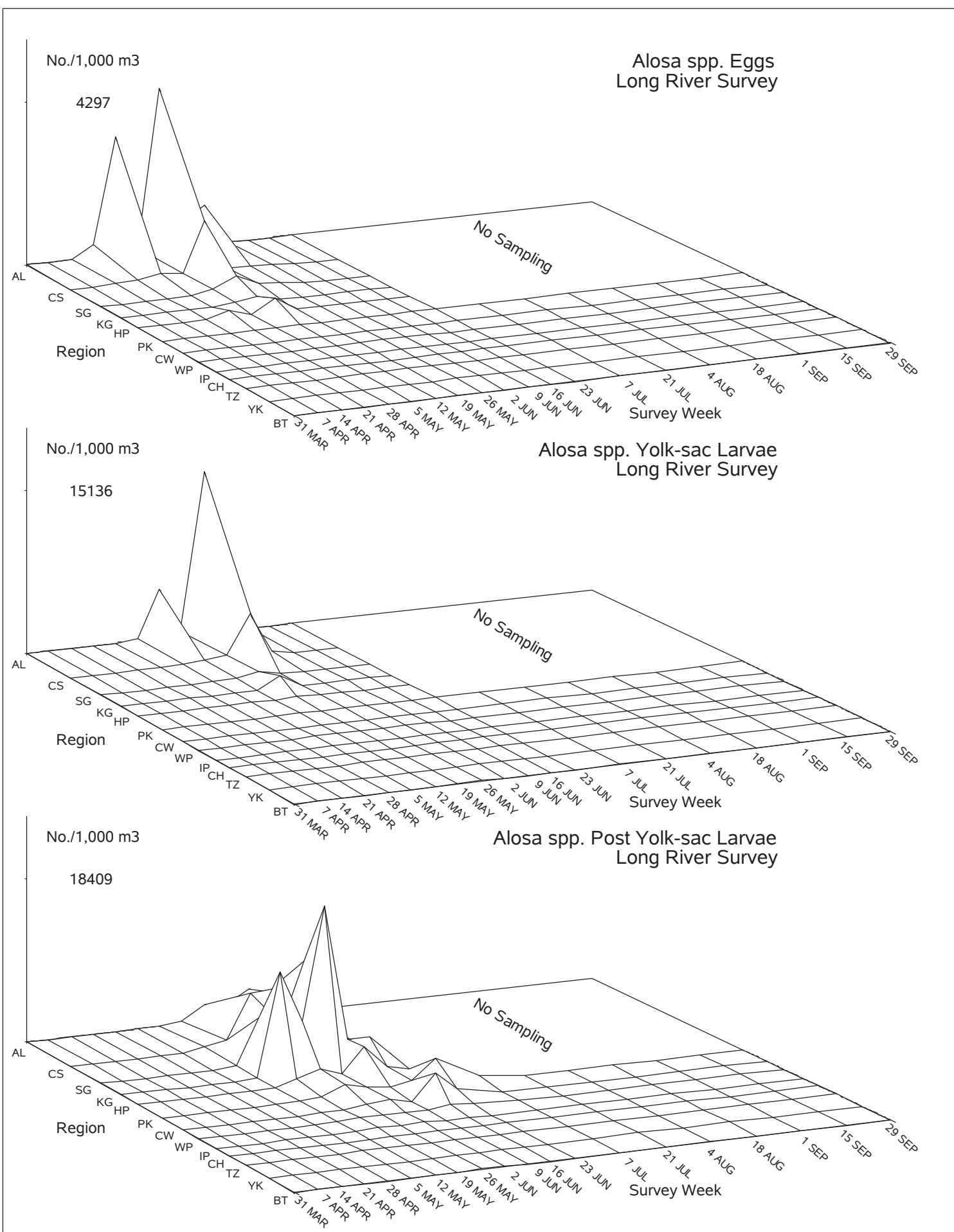


Figure 4-43. Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval *Alosa* sp. in the Hudson River estuary based on the 2014 Long River Survey.

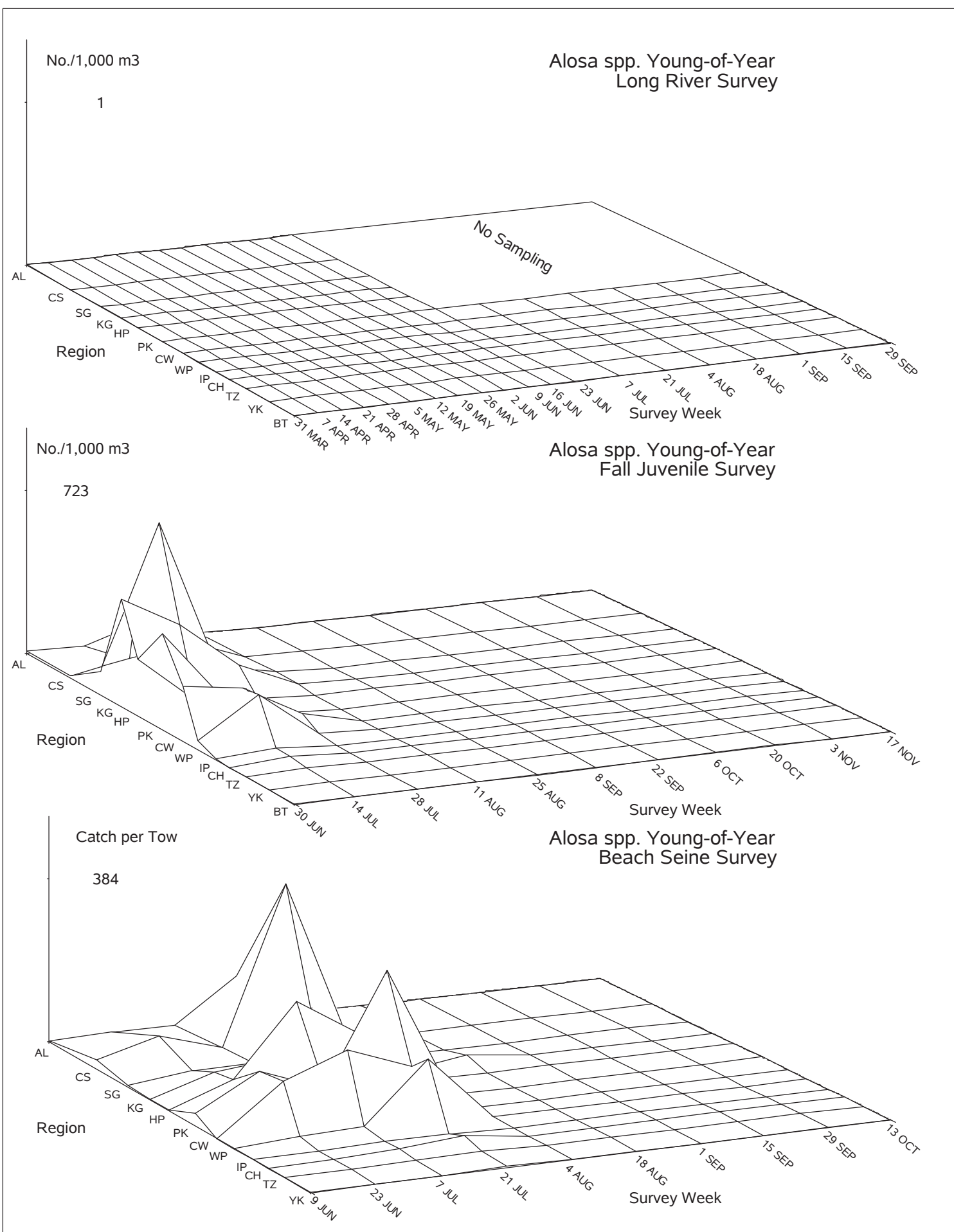


Figure 4-44. Spatiotemporal distribution of young-of-year *Alosa* sp. in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

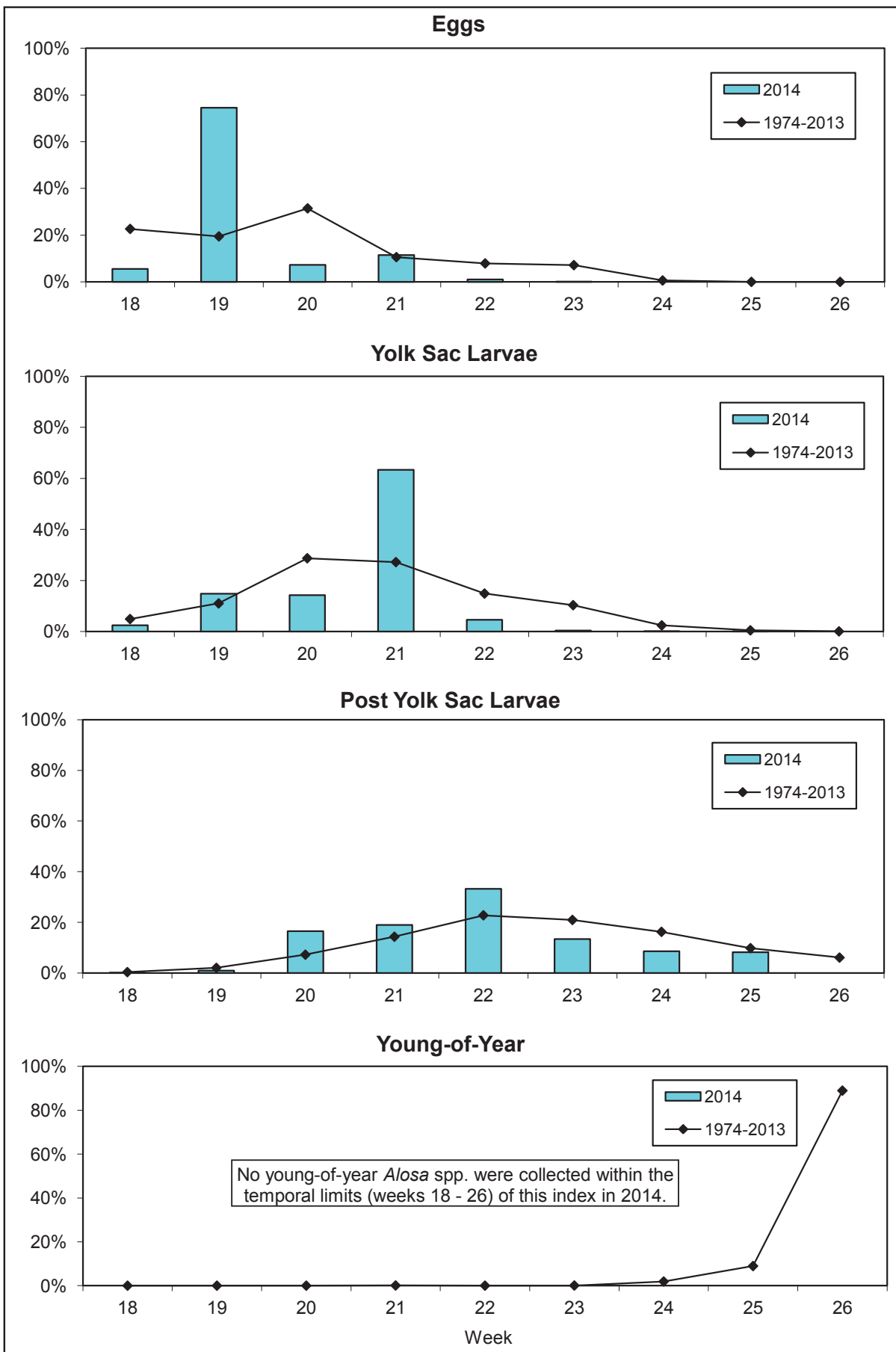


Figure 4-45. Temporal distribution indices for *Alosa* spp. collected during Long River surveys of the Hudson River estuary, 1974-2014.

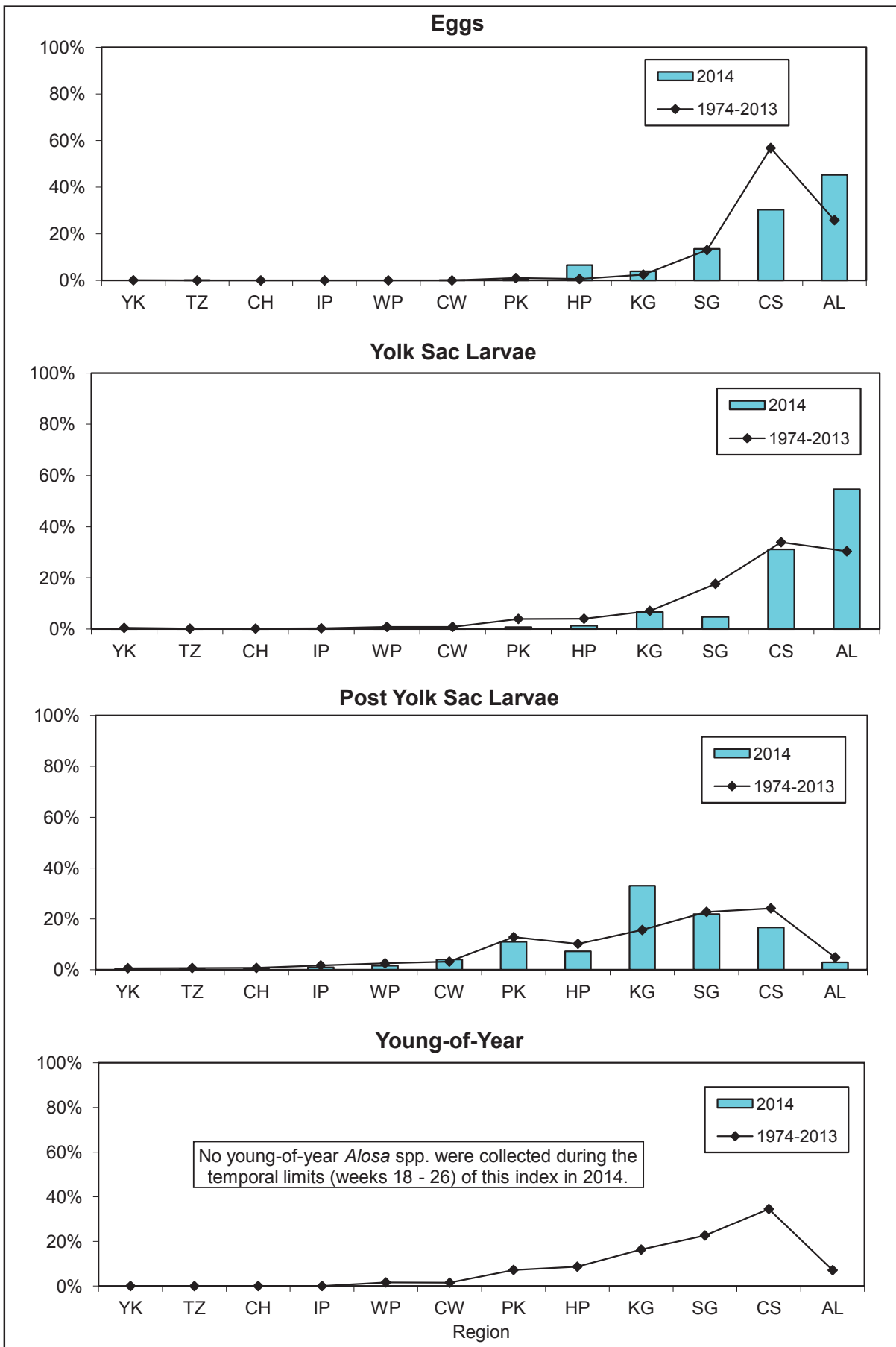


Figure 4-46. Geographic distribution indices for *Alosa* spp. collected during Long River surveys of the Hudson River estuary, 1974-2014.

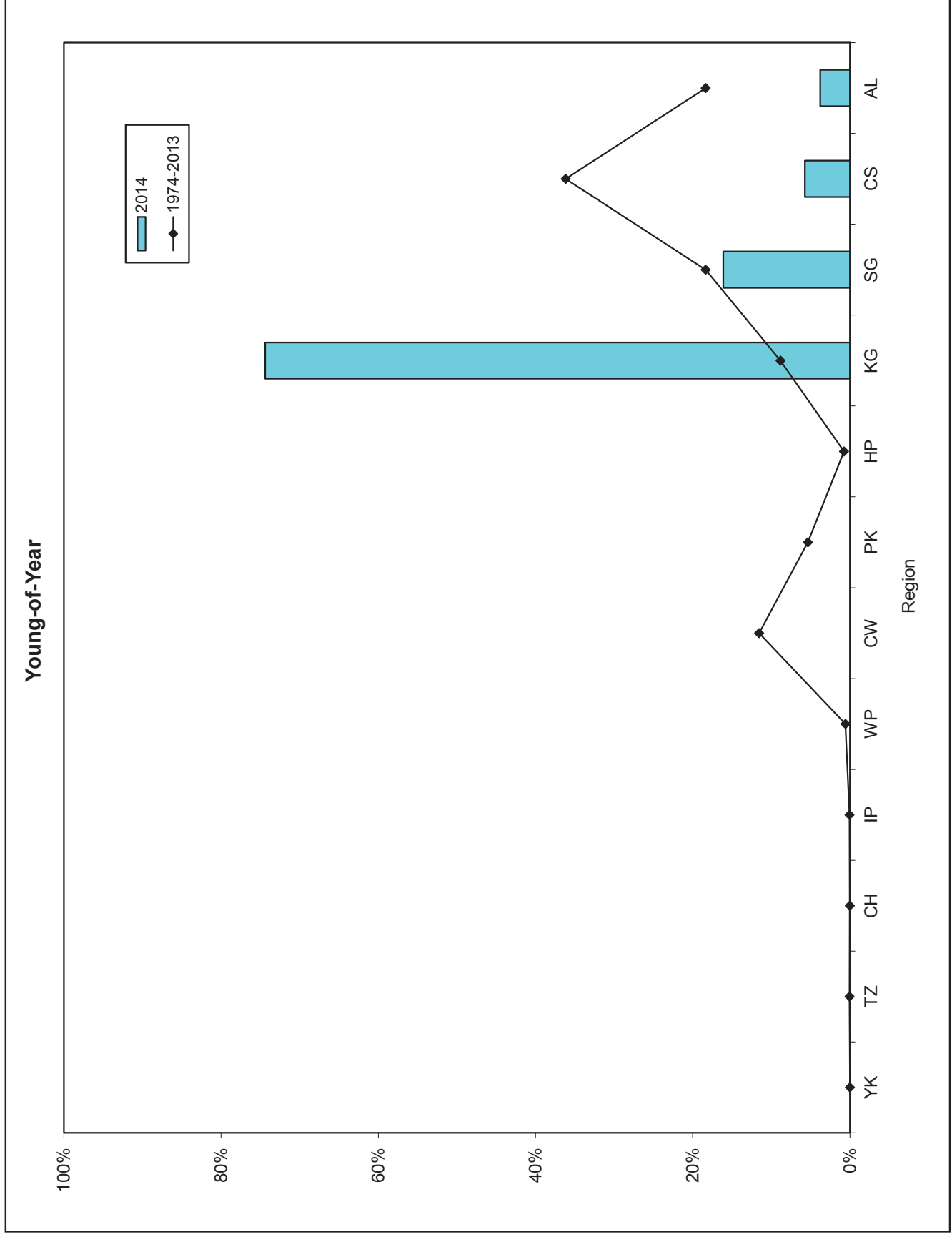


Figure 4-47. Geographic distribution indices for *Alosa* spp. collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

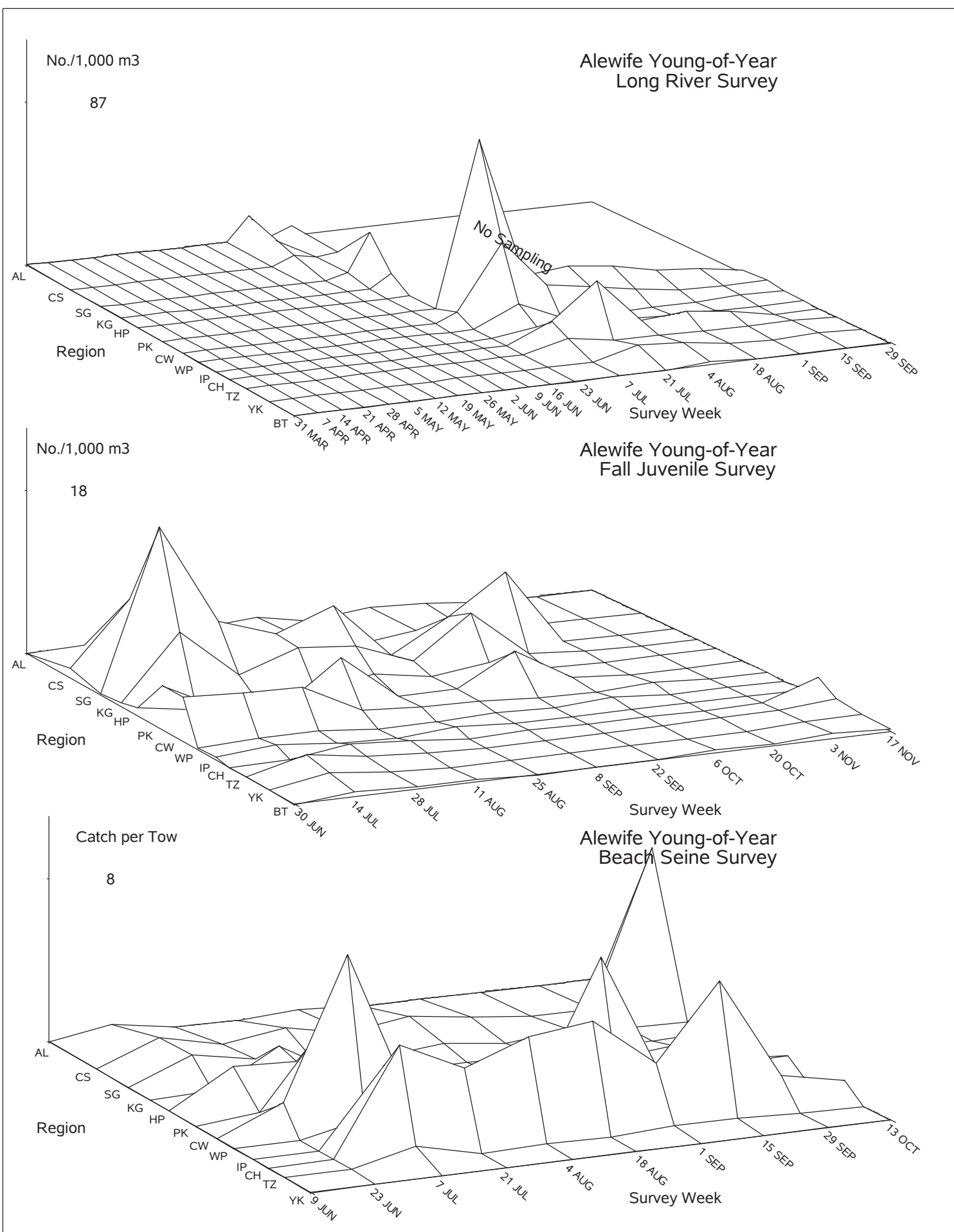


Figure 4-48. Spatiotemporal distribution of young-of-year Alewife in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

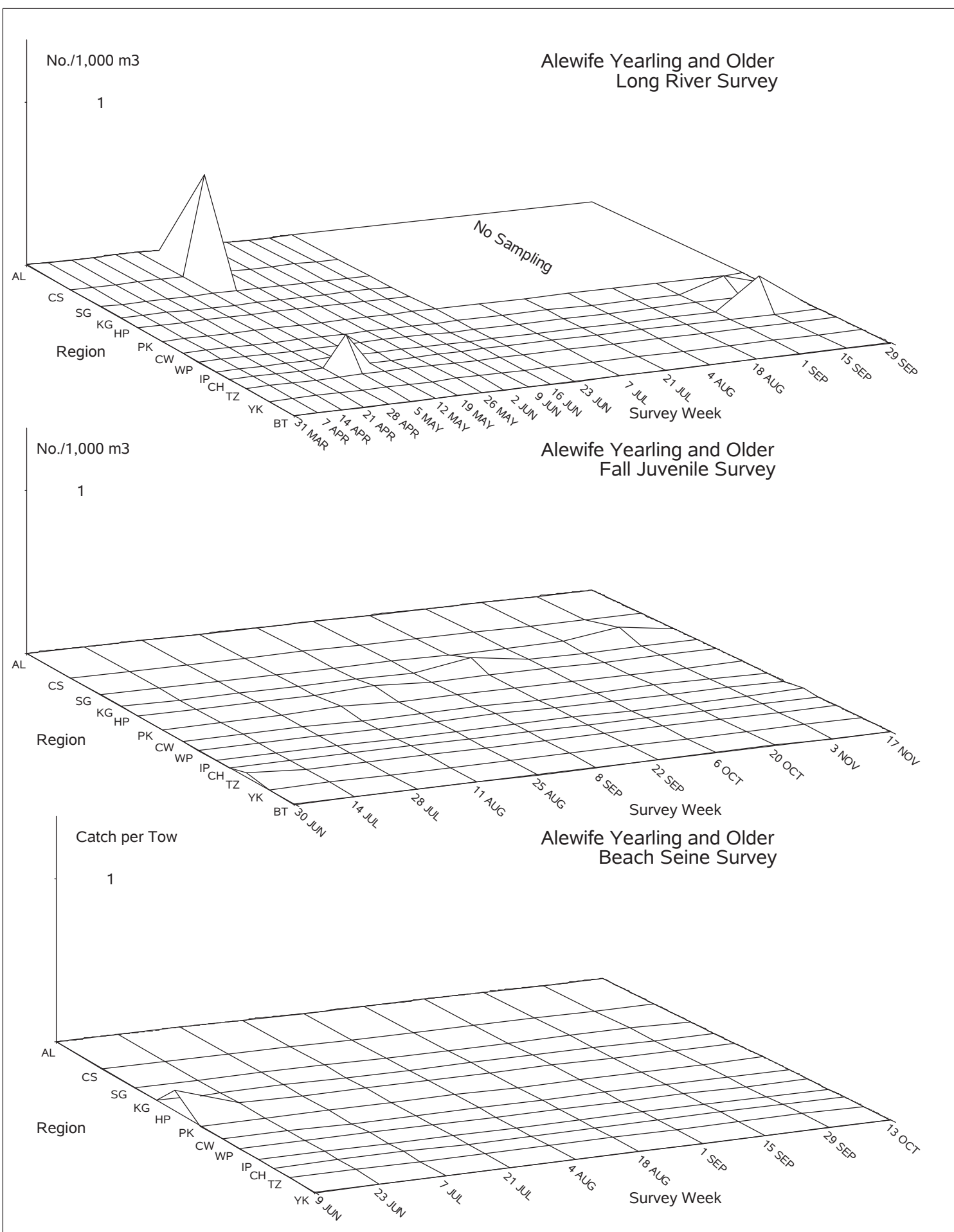


Figure 4-49. Spatiotemporal distribution of yearling and older Alewife in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

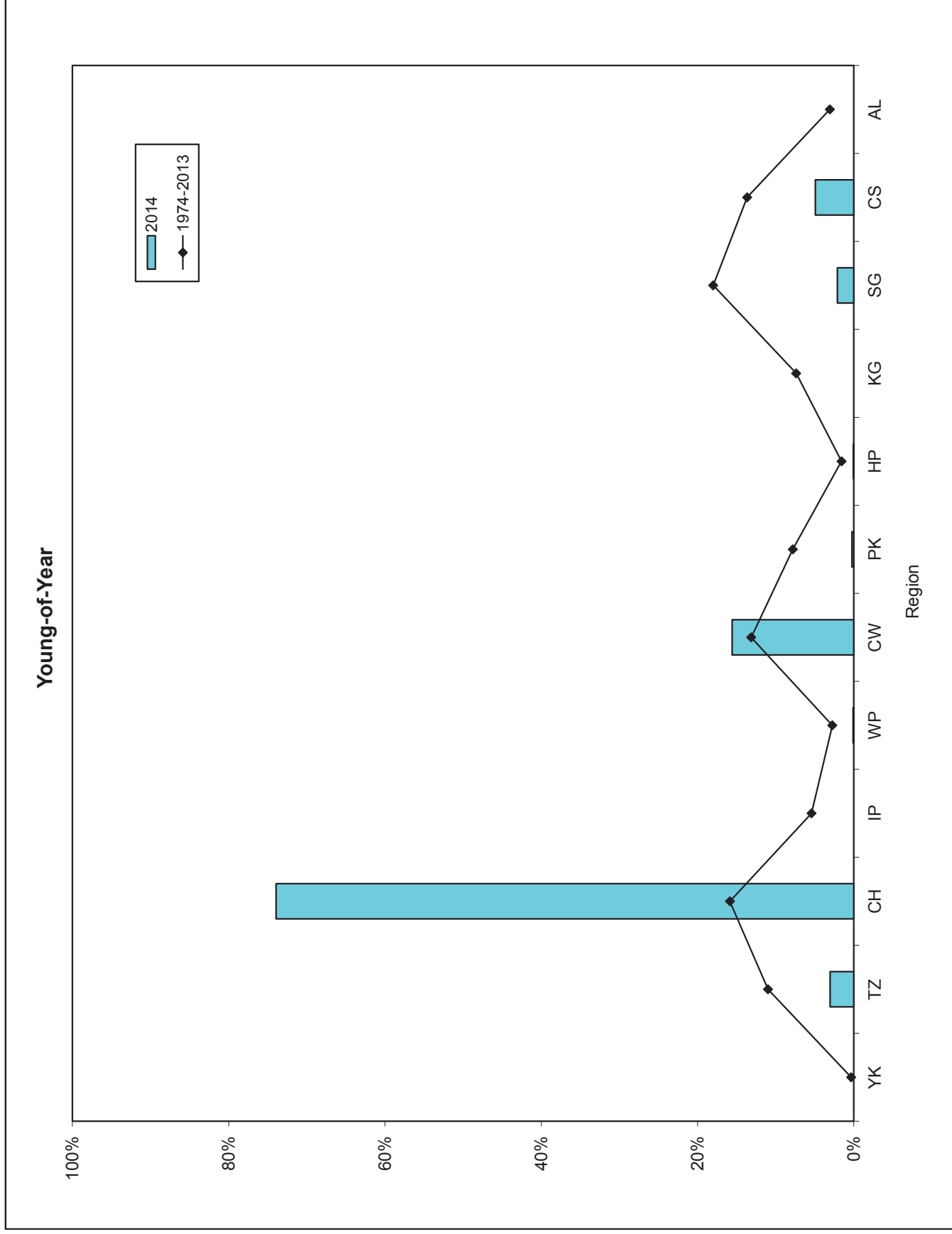


Figure 4-50. Geographic distribution indices for alewife collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

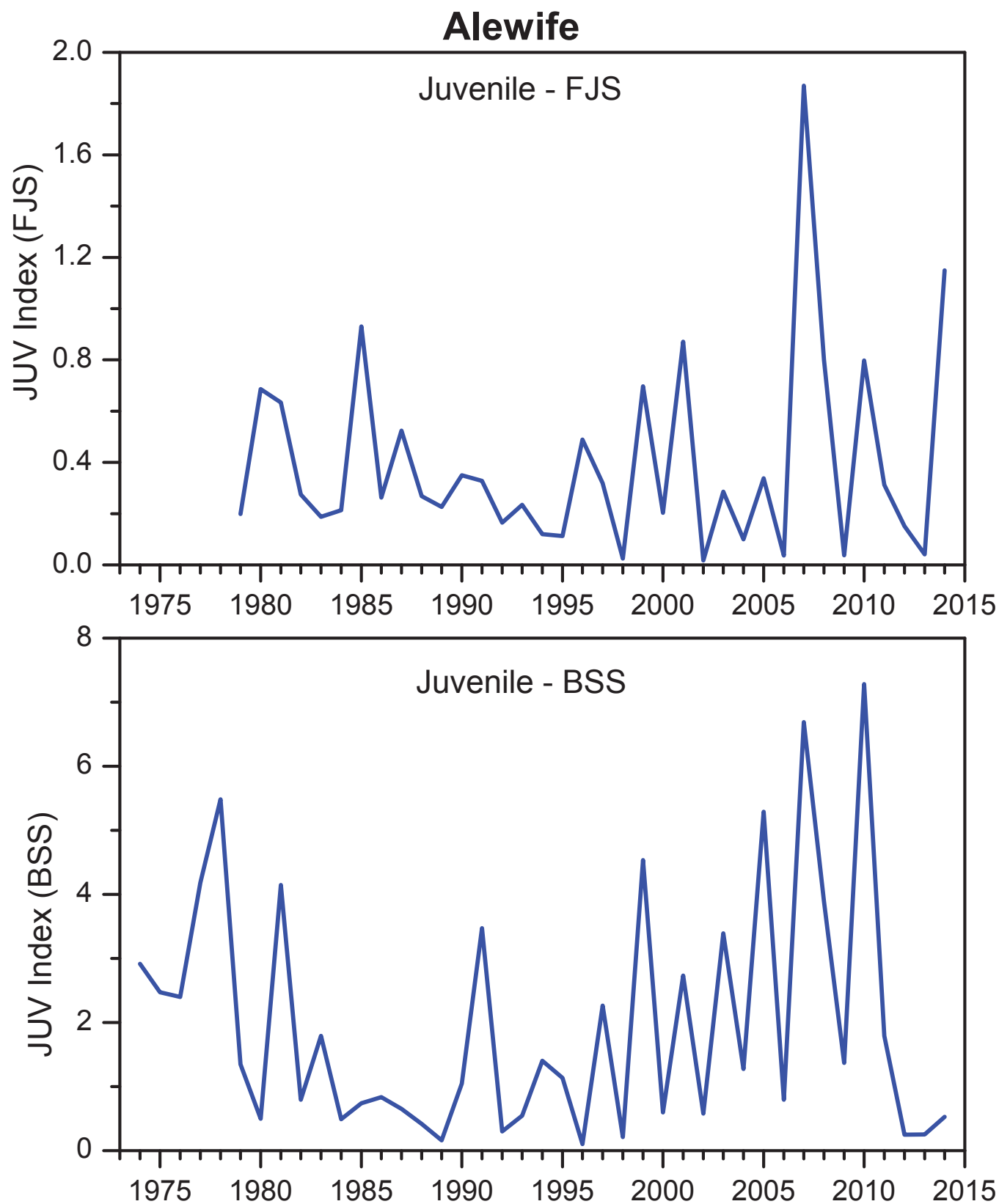


Figure 4-51. Alewife indices of annual abundance based on Fall Juvenile Survey, 1979-2014, and Beach Seine Survey, 1974-2014.

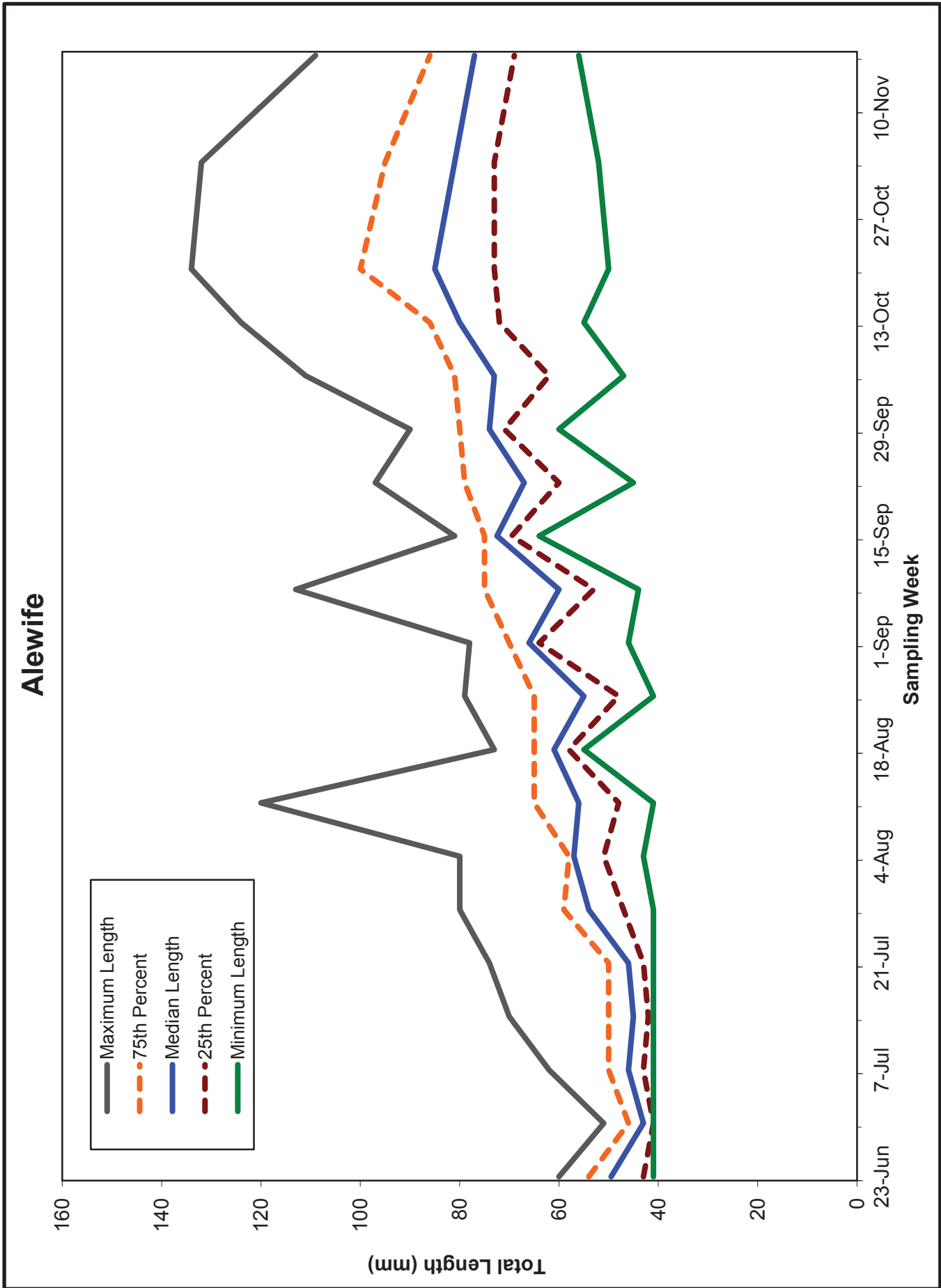


Figure 4-52. Weekly length statistics for young-of-year alewife in the Hudson River estuary, 2014.

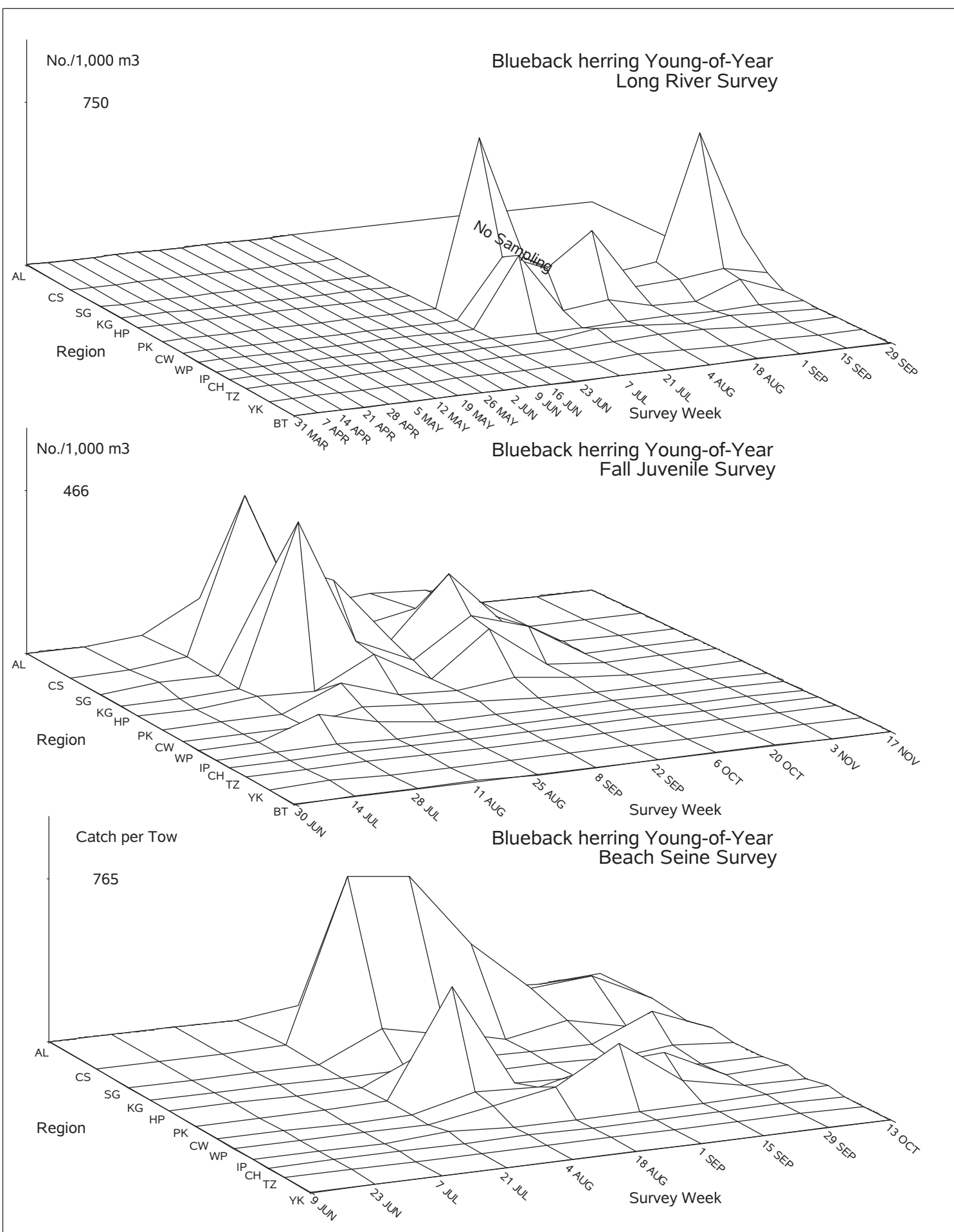


Figure 4-53. Spatiotemporal distribution of young-of-year blueback herring in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

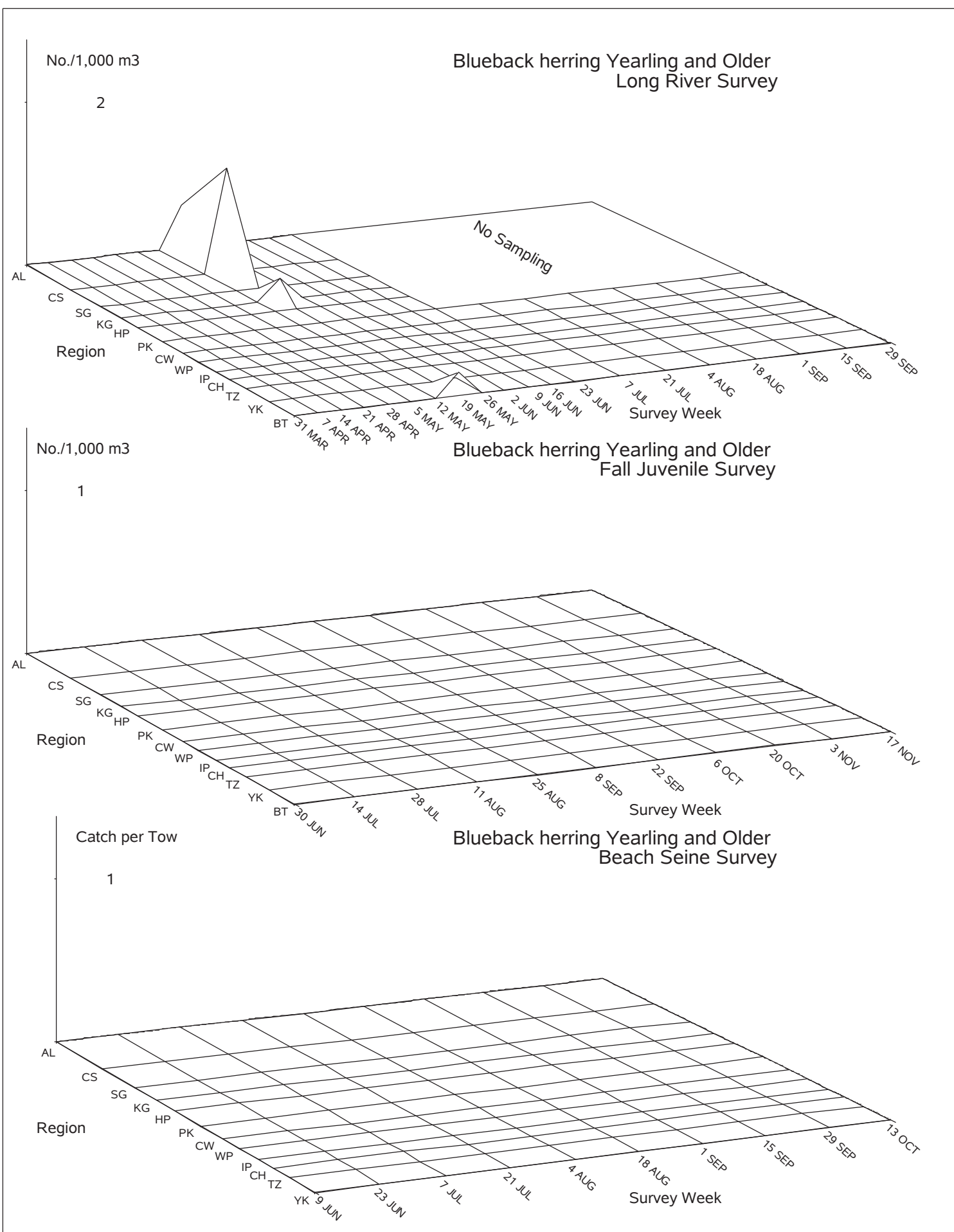


Figure 4-54. Spatiotemporal distribution of yearling and older blueback herring in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

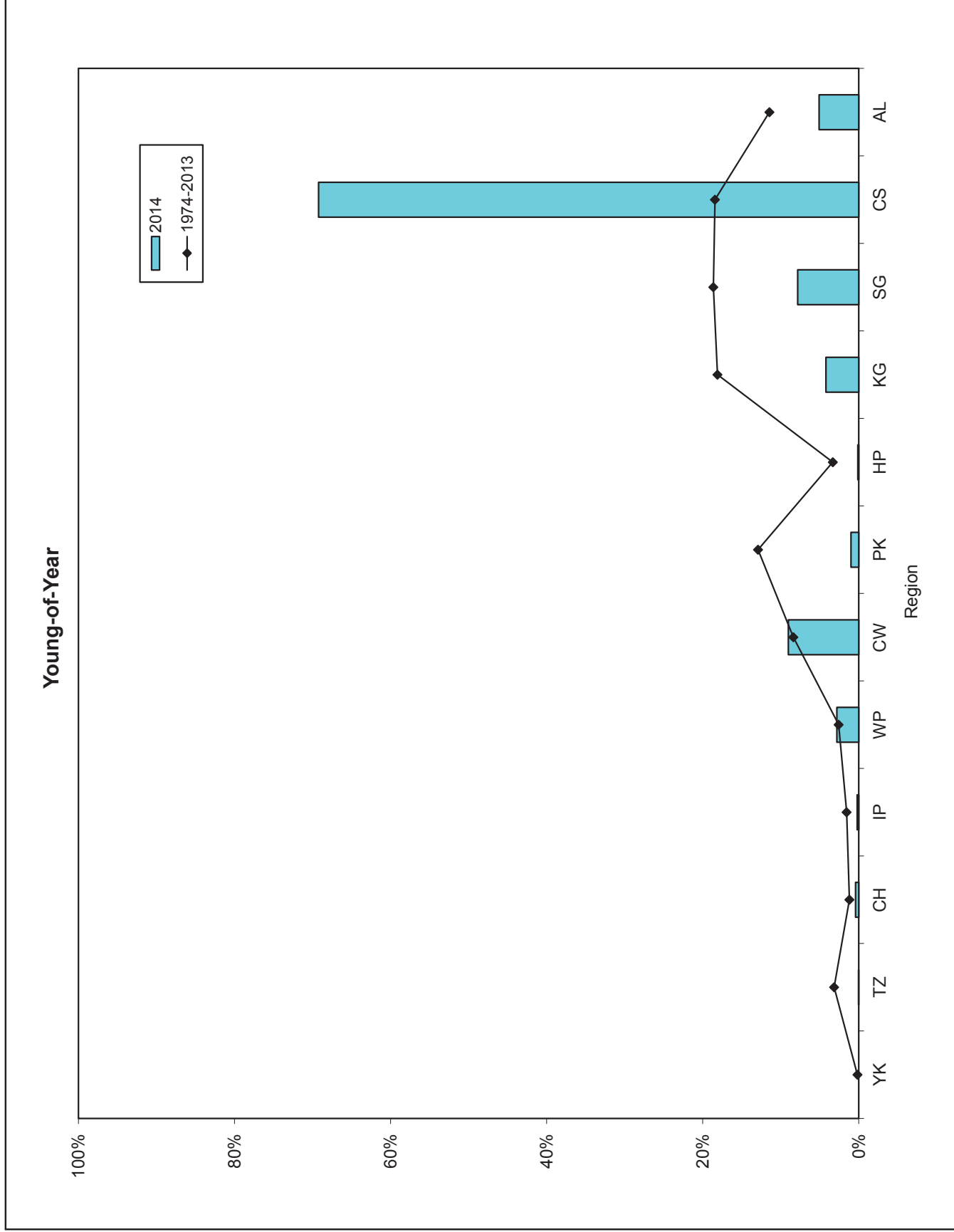


Figure 4-55. Geographic distribution indices for blueback herring collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

Blueback herring

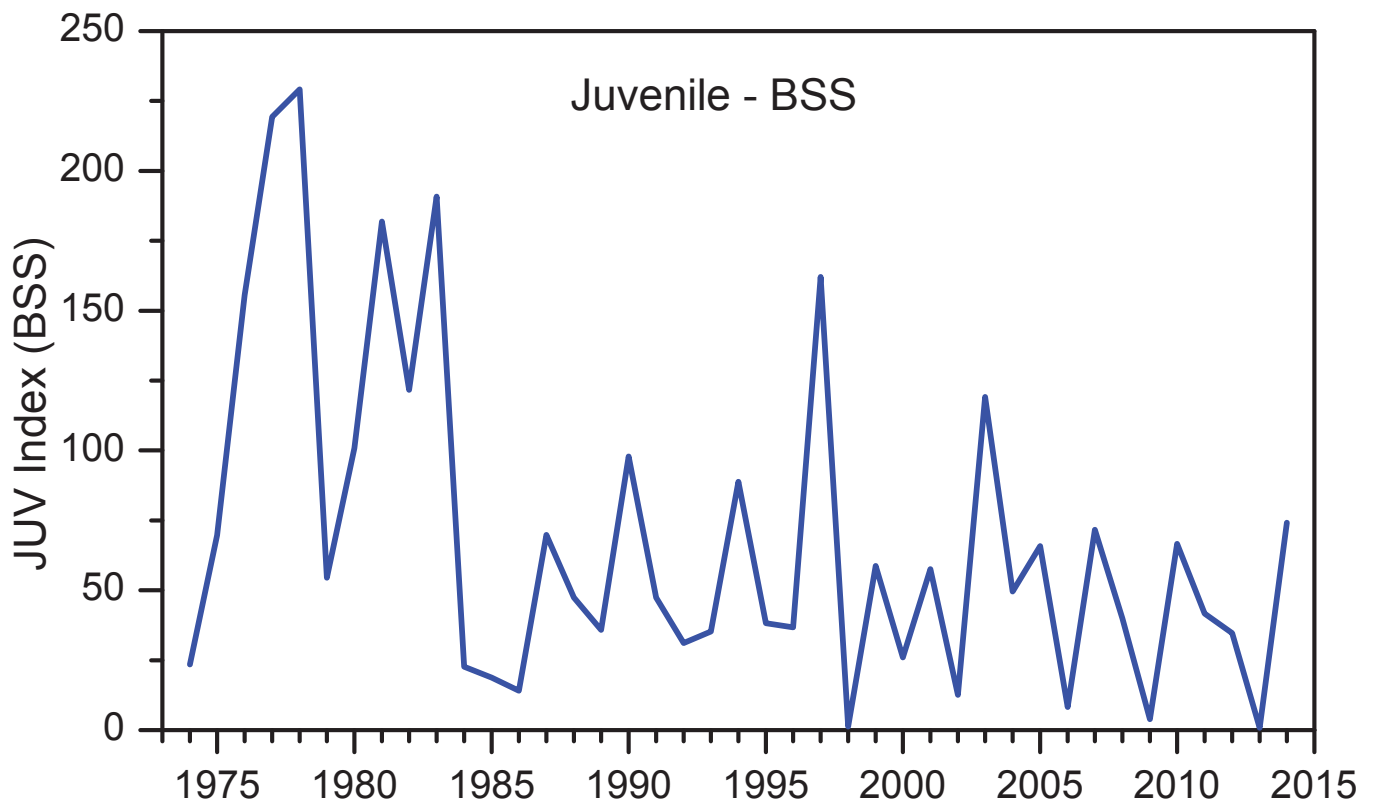
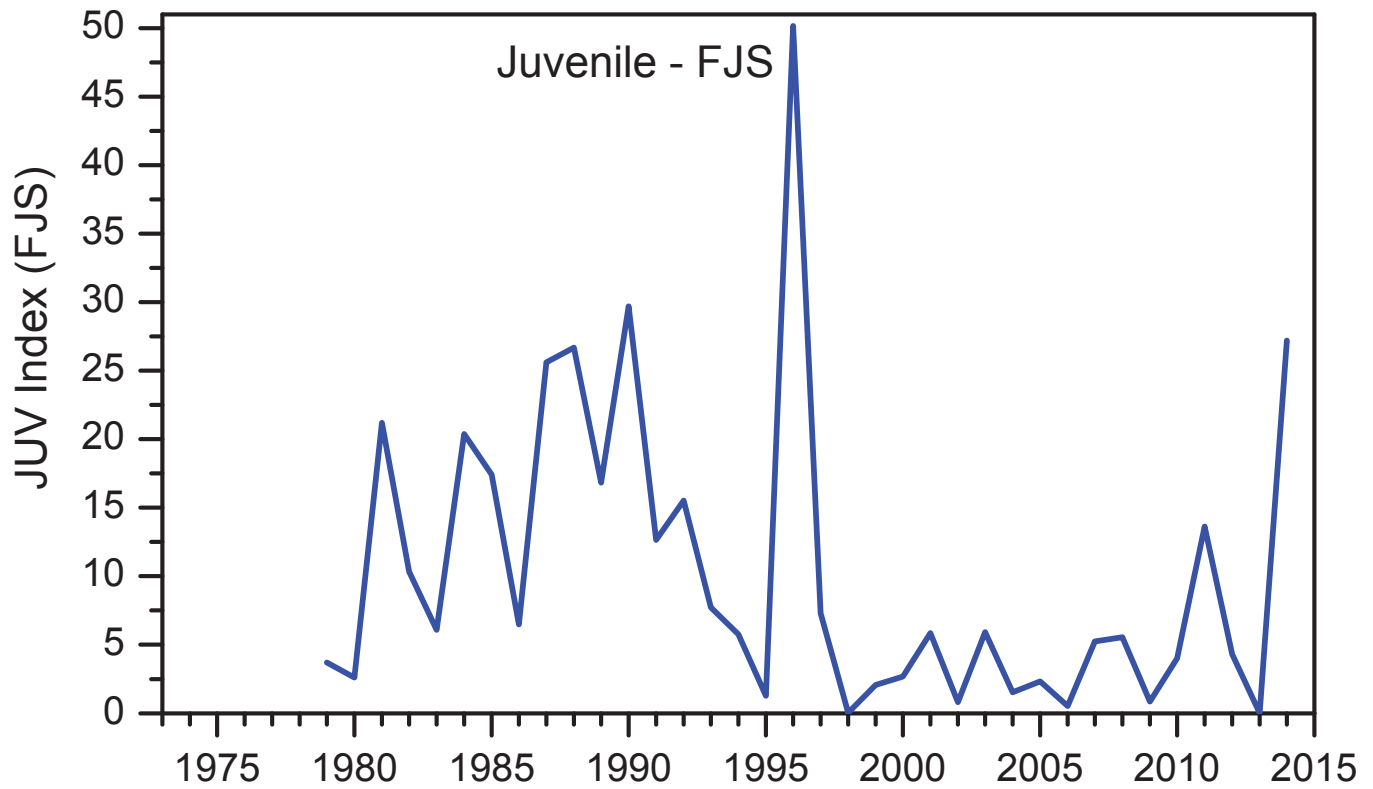


Figure 4-56. Blueback herring indices of annual abundance based on Fall Juvenile Survey, 1979-2014, and Beach Seine Survey, 1974-2014.

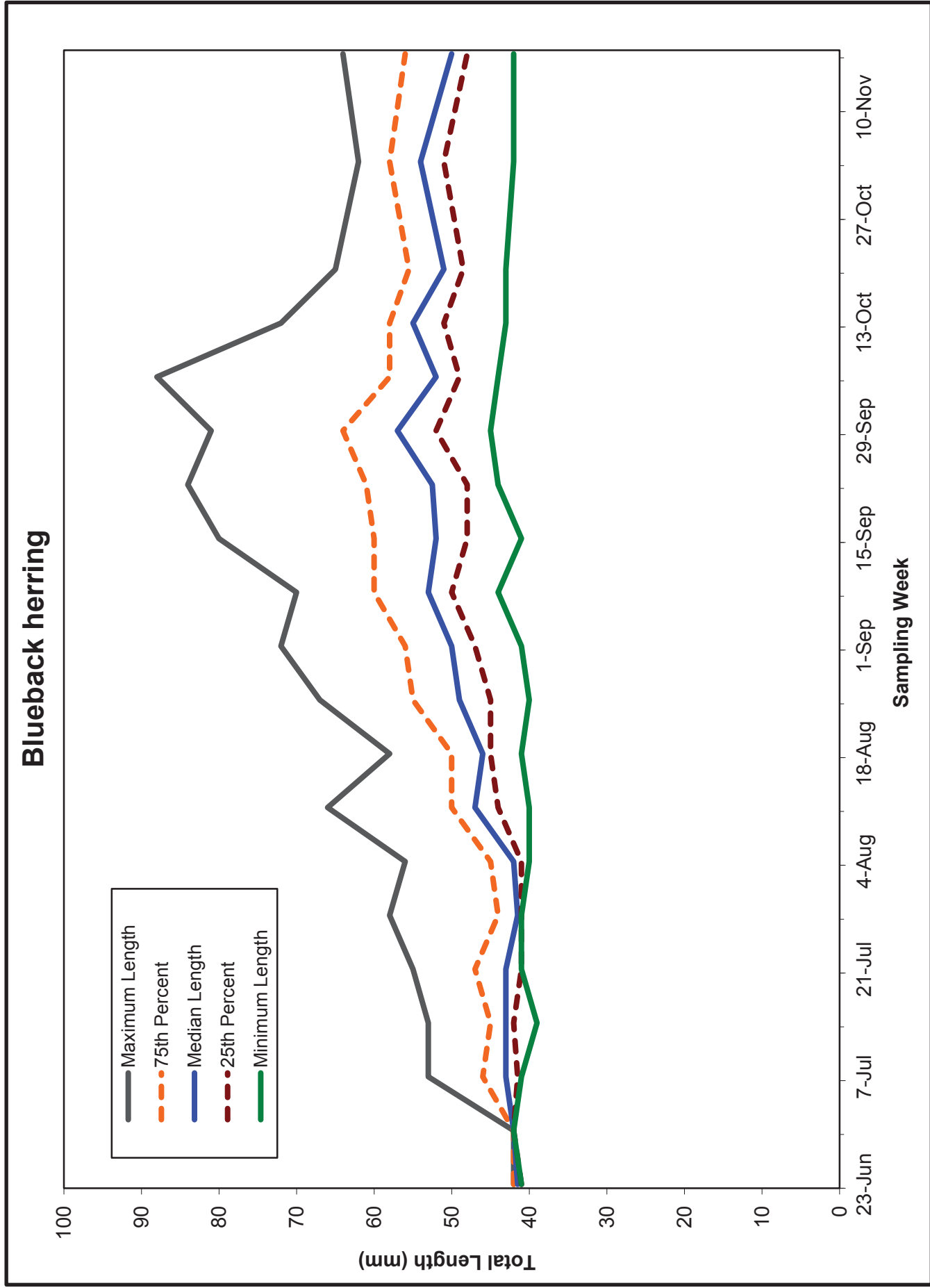


Figure 4-57. Weekly length statistics for young-of-year blueback herring in the Hudson River estuary, 2014.

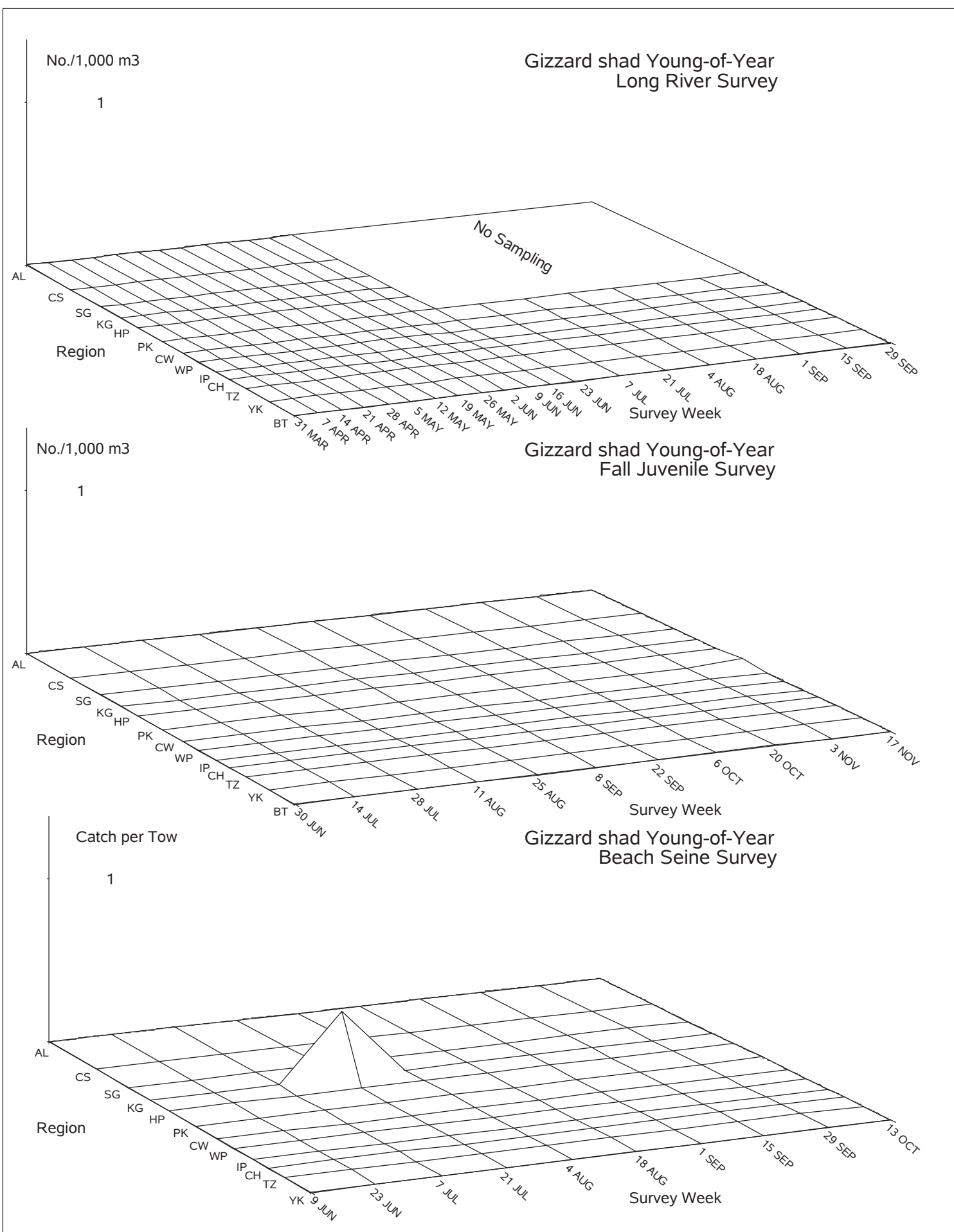


Figure 4-58. Spatiotemporal distribution of young-of-year gizzard shad in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

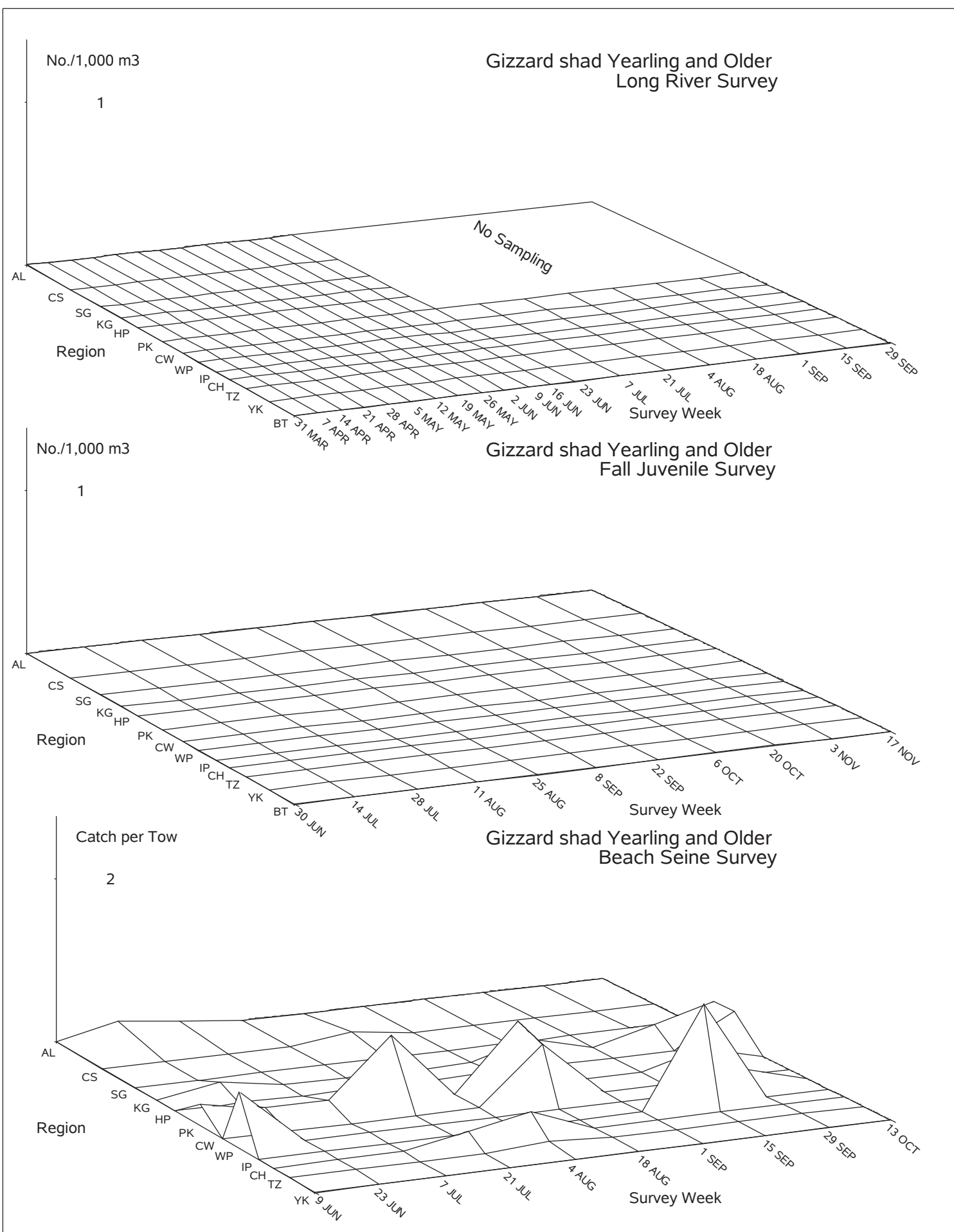


Figure 4-59. Spatiotemporal distribution of yearling and older gizzard shad in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

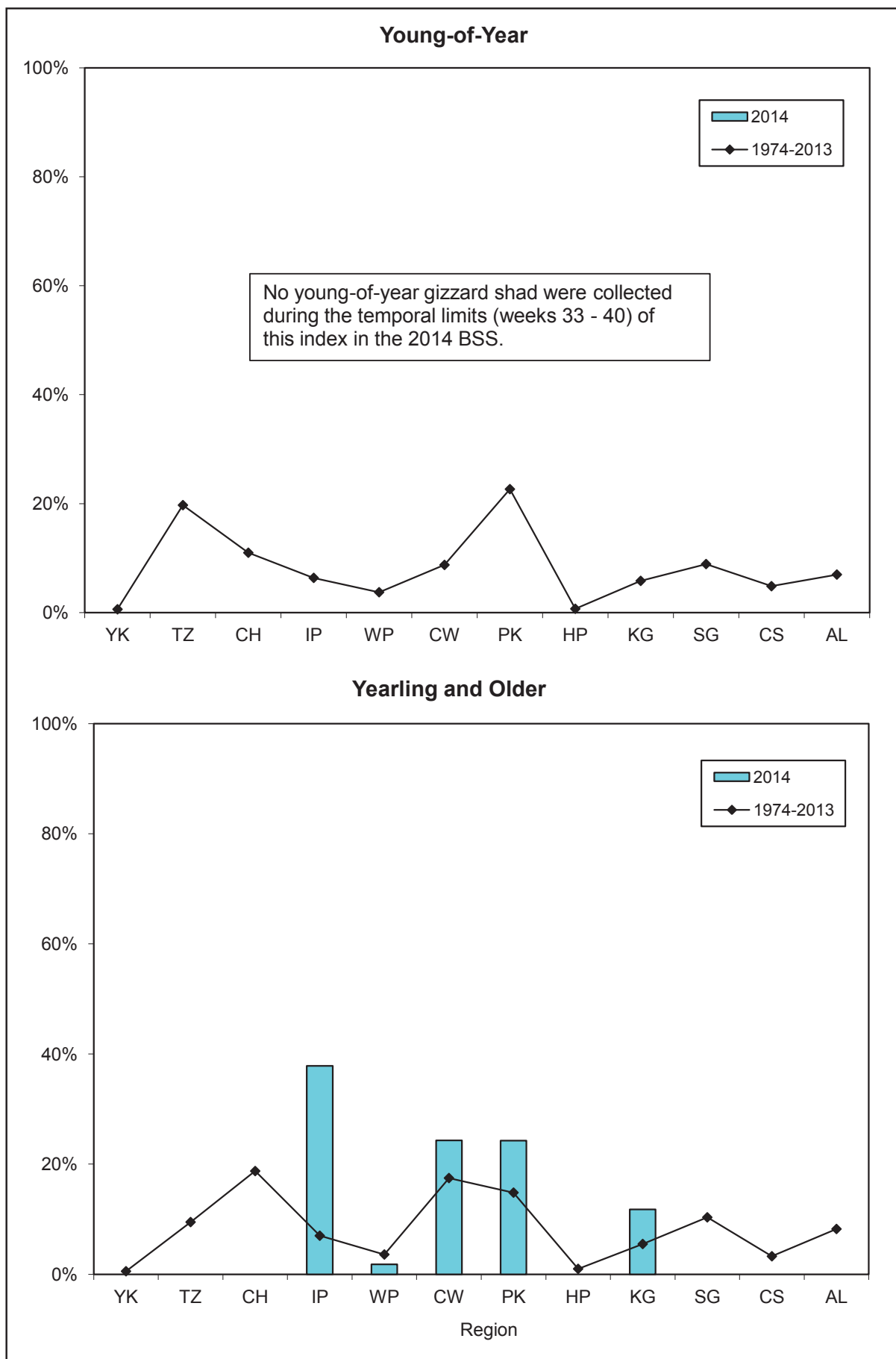


Figure 4-60. Geographic distribution indices for gizzard shad collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

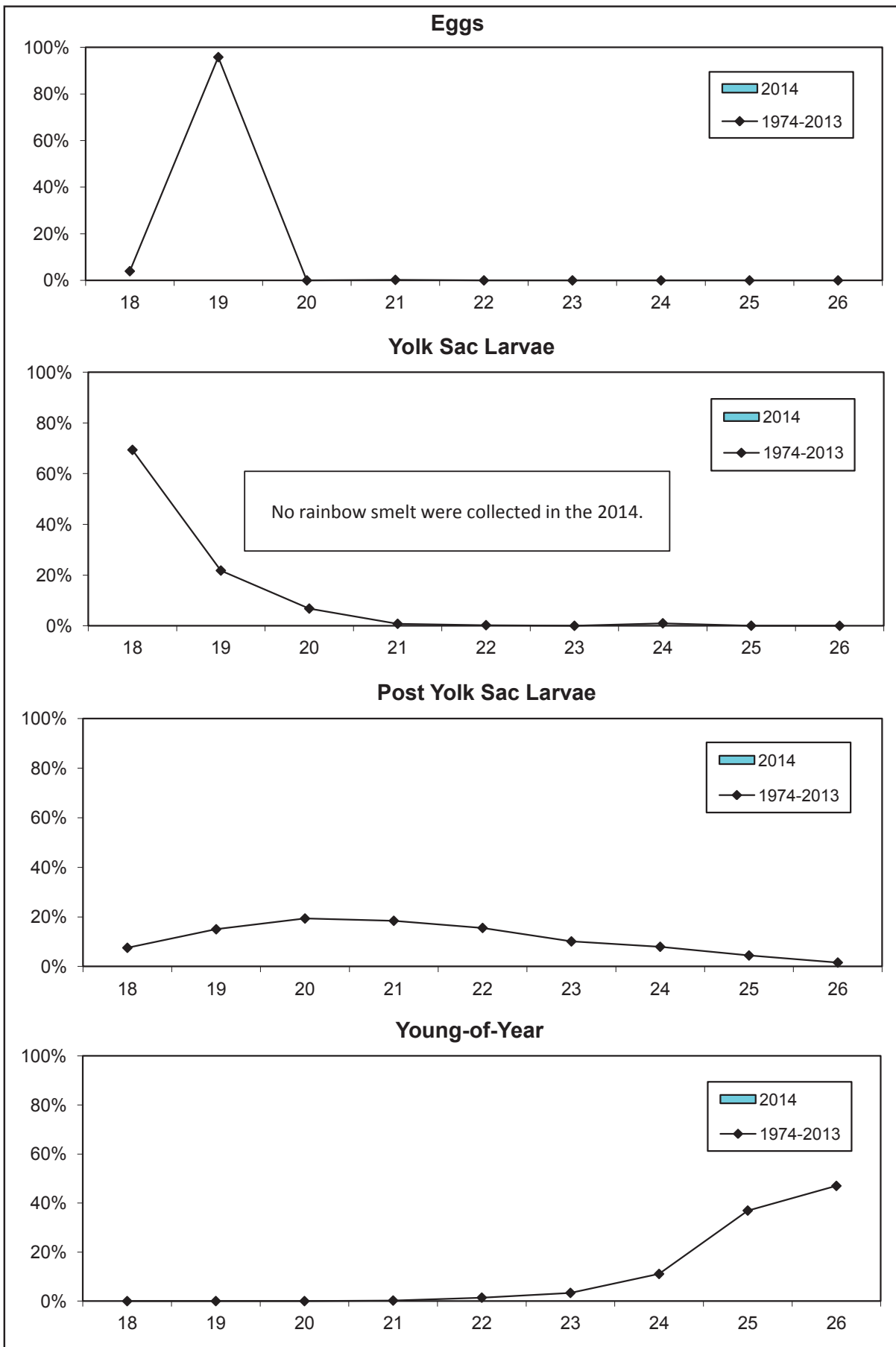


Figure 4-61. Temporal distribution indices for rainbow smelt collected during Long River surveys of the Hudson River estuary, 1974-2014.

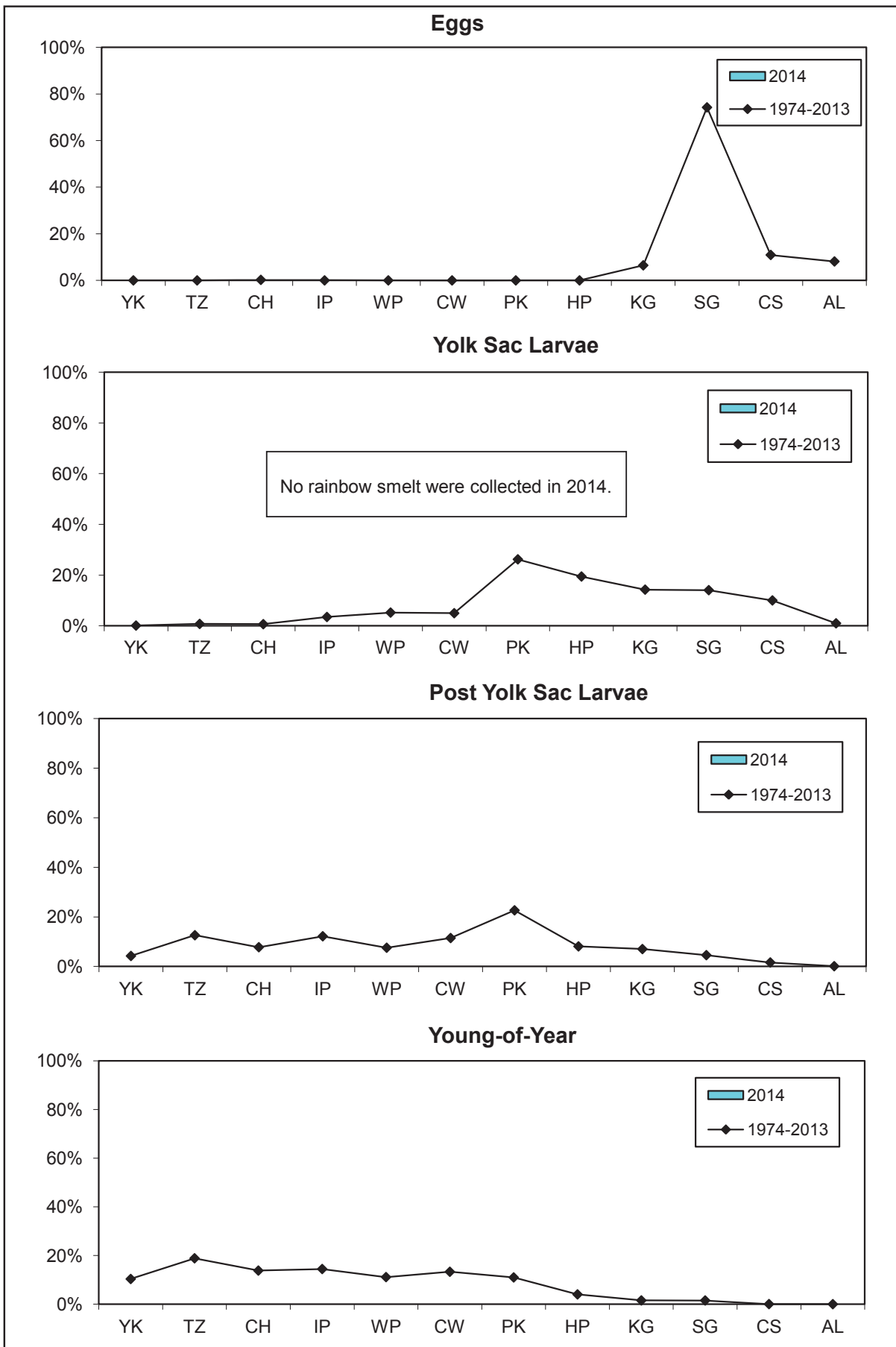


Figure 4-62. Geographic distribution indices for rainbow smelt collected during Long River surveys of the Hudson River estuary, 1974-2014.

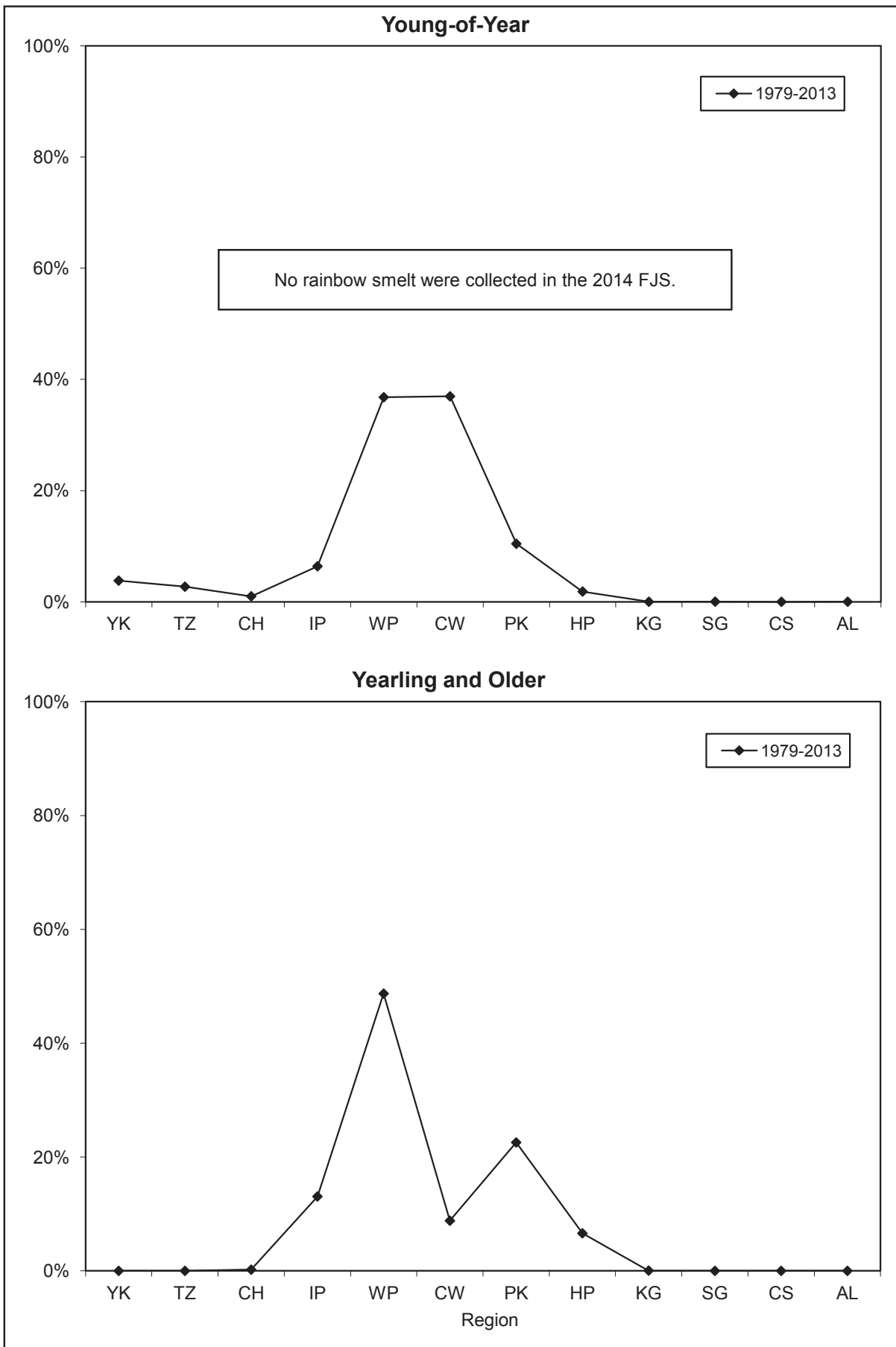


Figure 4-63. Geographic distribution indices for rainbow smelt collected during Fall Juvenile surveys of the Hudson River estuary, 1979-2014.

Rainbow smelt

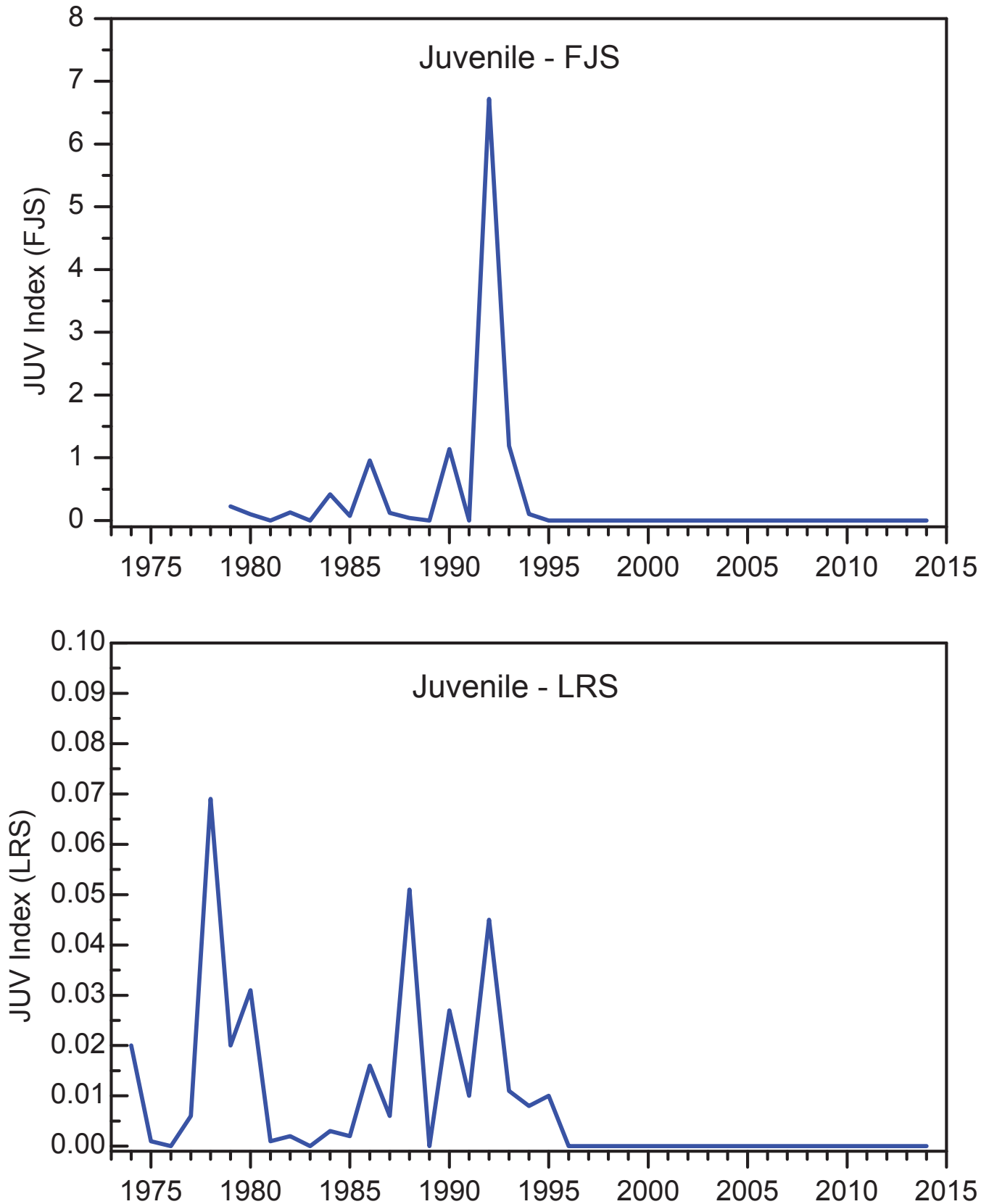


Figure 4-64. Rainbow smelt indices of annual abundance based on Fall Juvenile Survey, 1979-2014, and Long River Survey, 1974-2014.

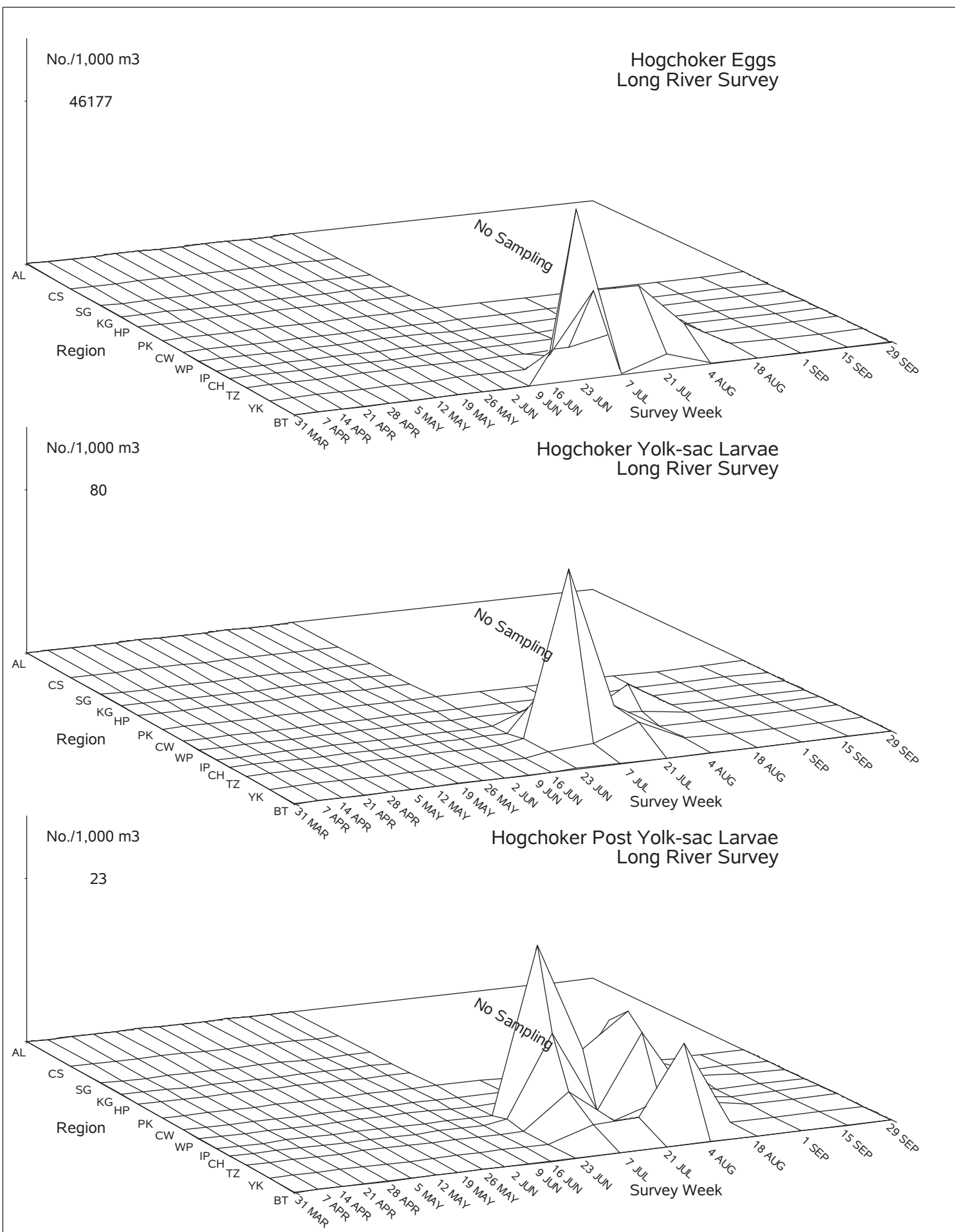


Figure 4-65. Spatiotemporal distribution of eggs, yolk-sac, and post yolk-sac larval hogchoker in the Hudson River estuary based on the 2014 Long River Survey.

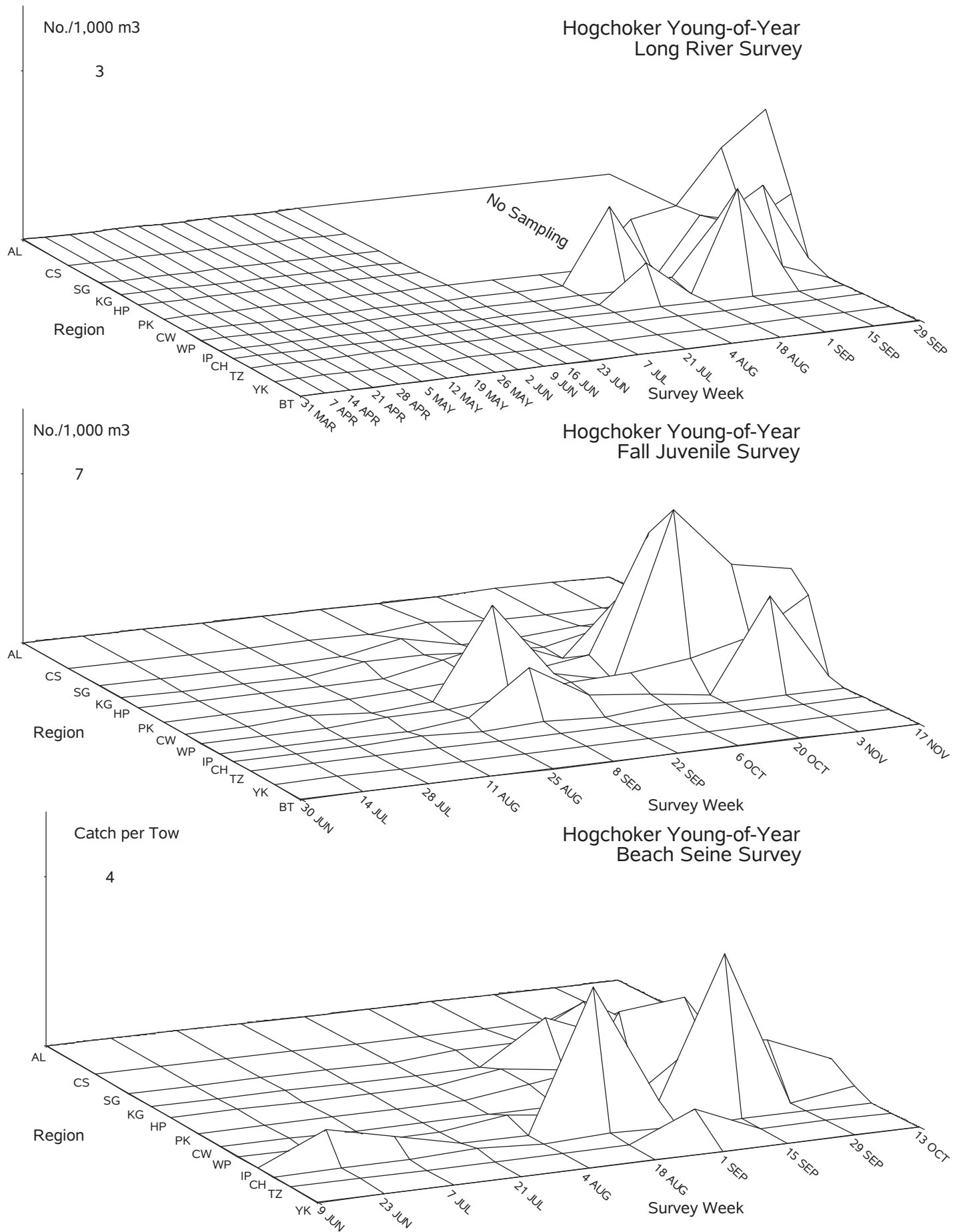


Figure 4-66. Spatiotemporal distribution of young-of-year hogchoker in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

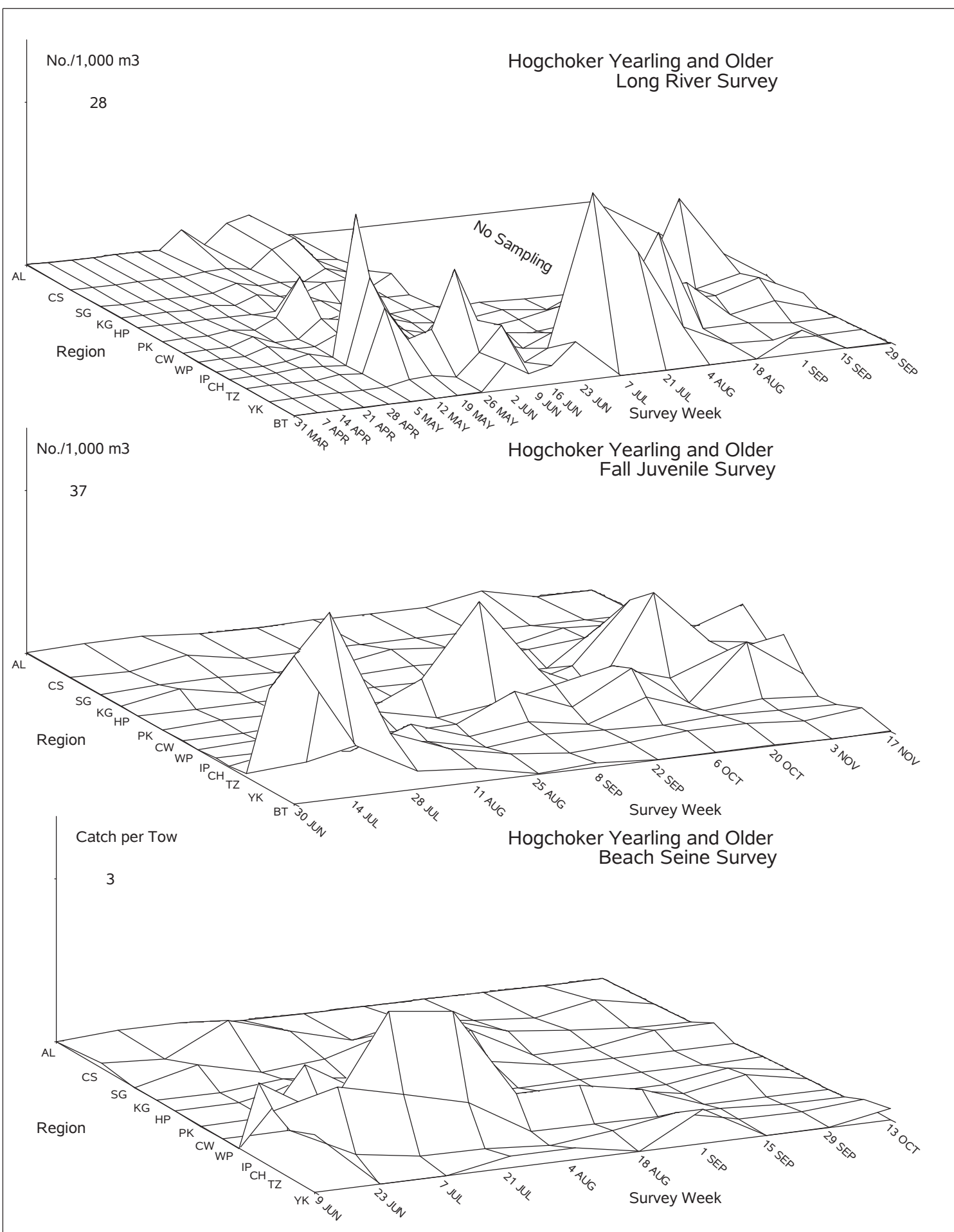


Figure 4-67. Spatiotemporal distribution of yearling and older hogchoker in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

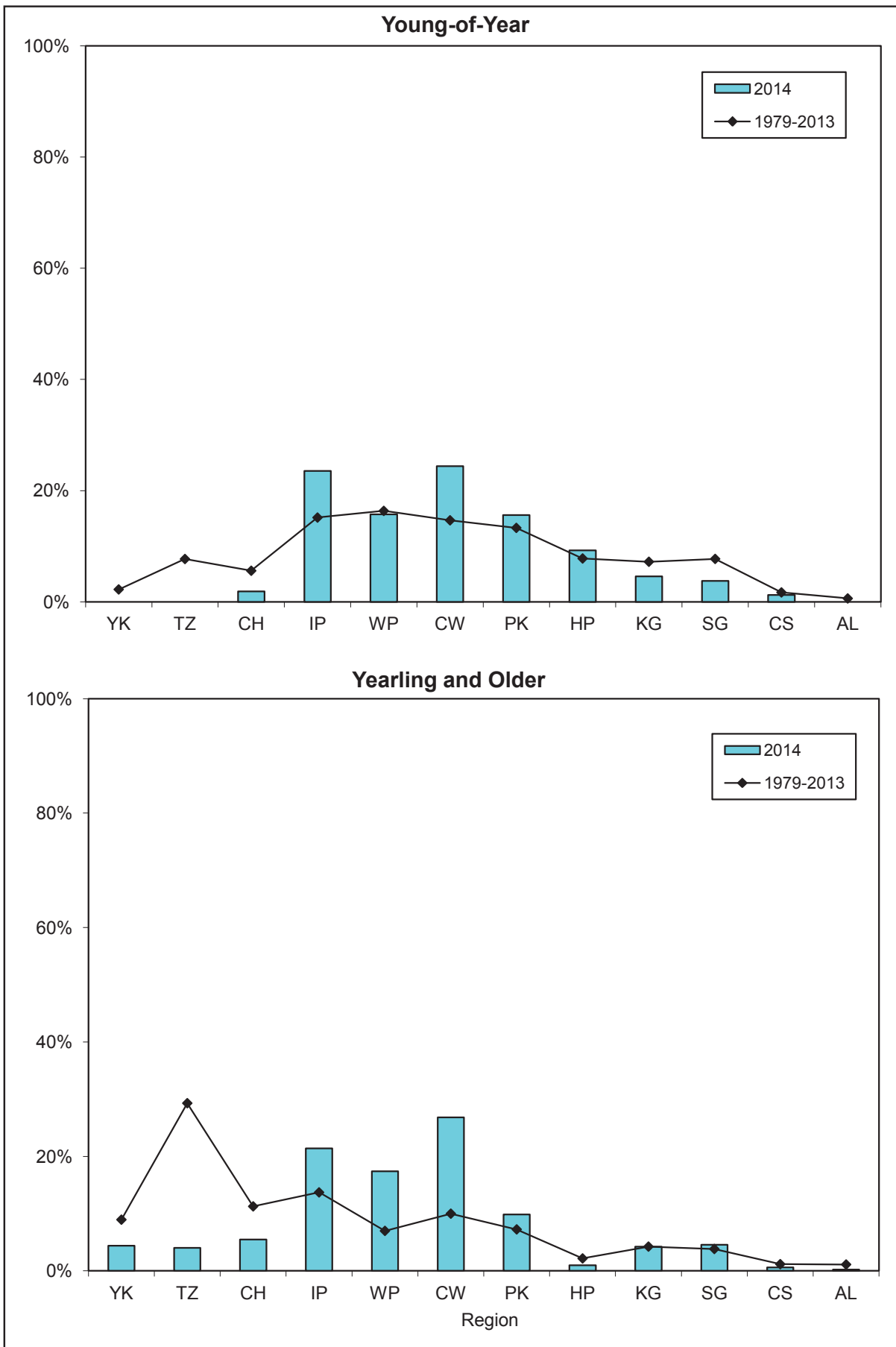


Figure 4-68. Geographic distribution indices for hogchoker collected during Fall Juvenile surveys of the Hudson River estuary, 1979-2014.

Hogchoker

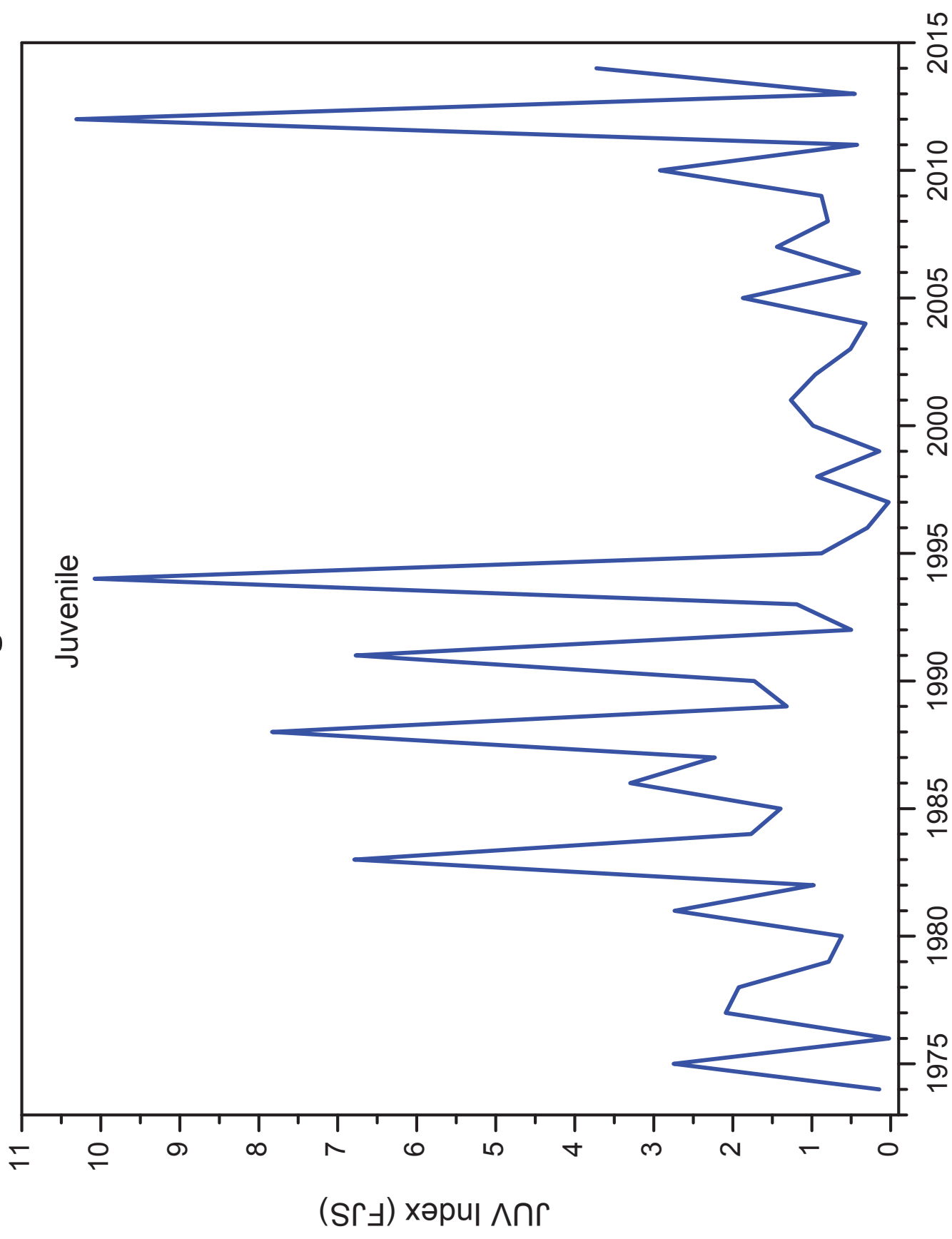


Figure 4-69. Hogchoker indices of annual abundance based on Fall Juvenile Survey, 1974-2014.

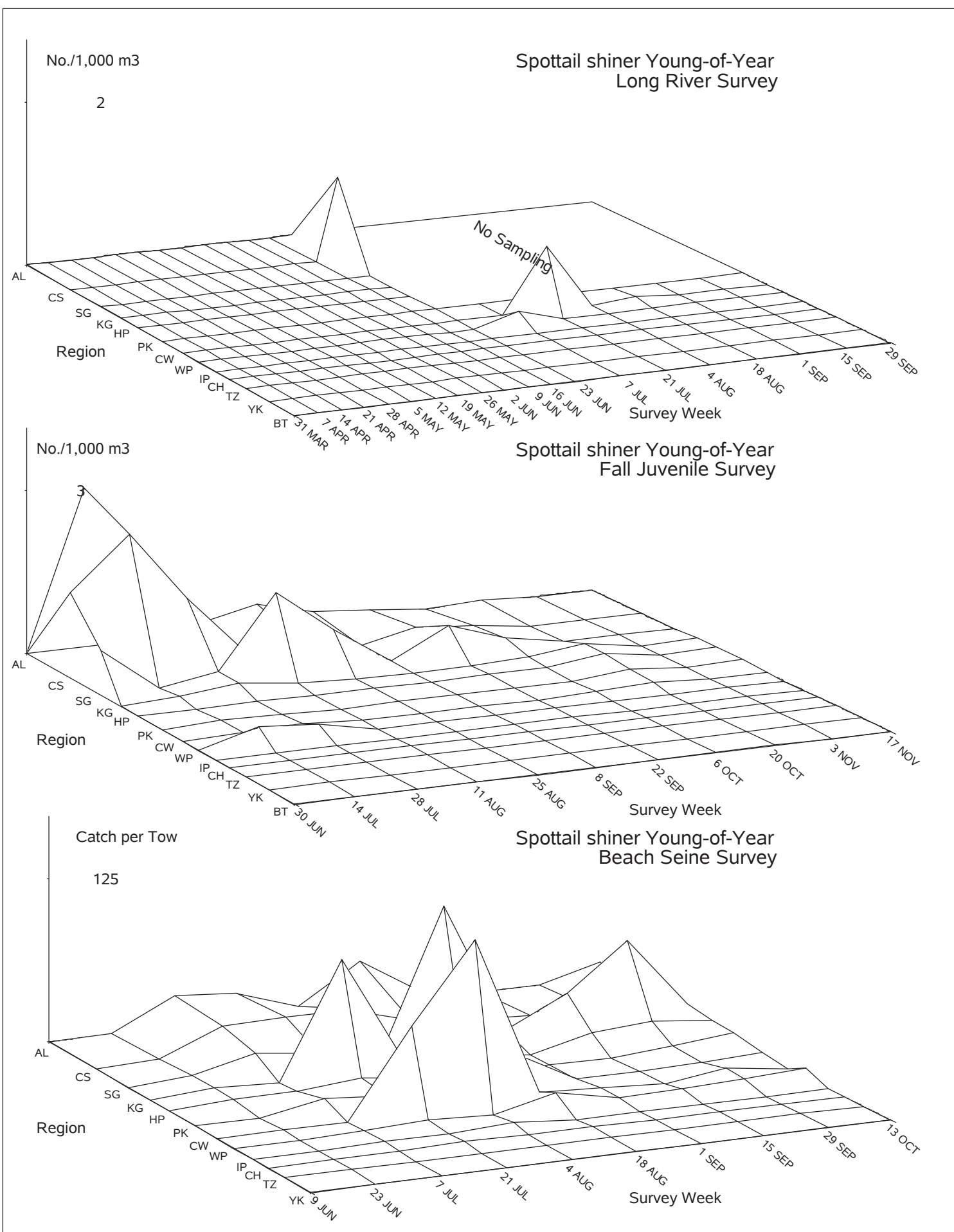


Figure 4-70. Spatiotemporal distribution of young-of-year spottail shiner in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

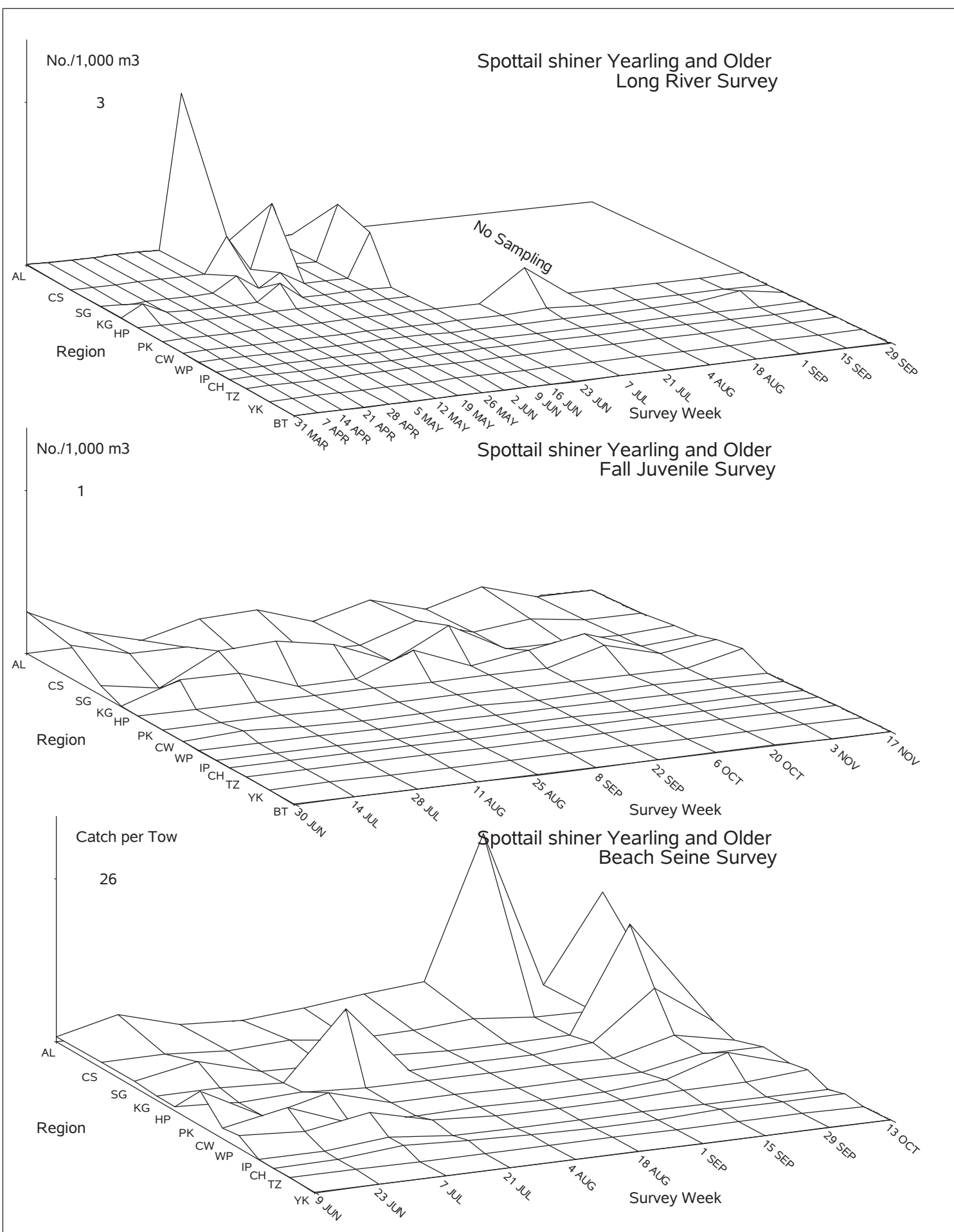


Figure 4-71. Spatiotemporal distribution of yearling and older spottail shiner in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

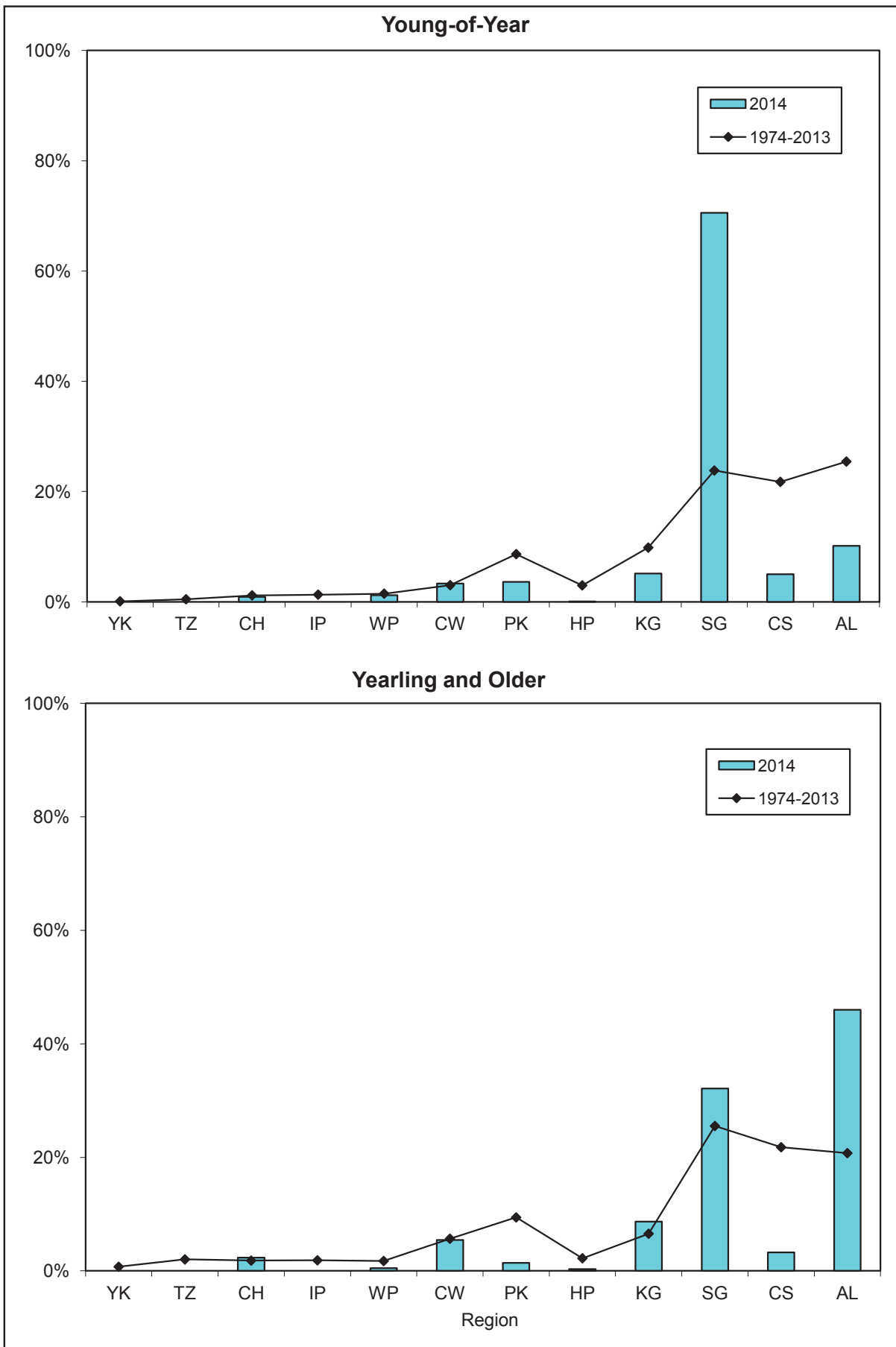


Figure 4-72. Geographic distribution indices for spottail shiner collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

Spottail shiner

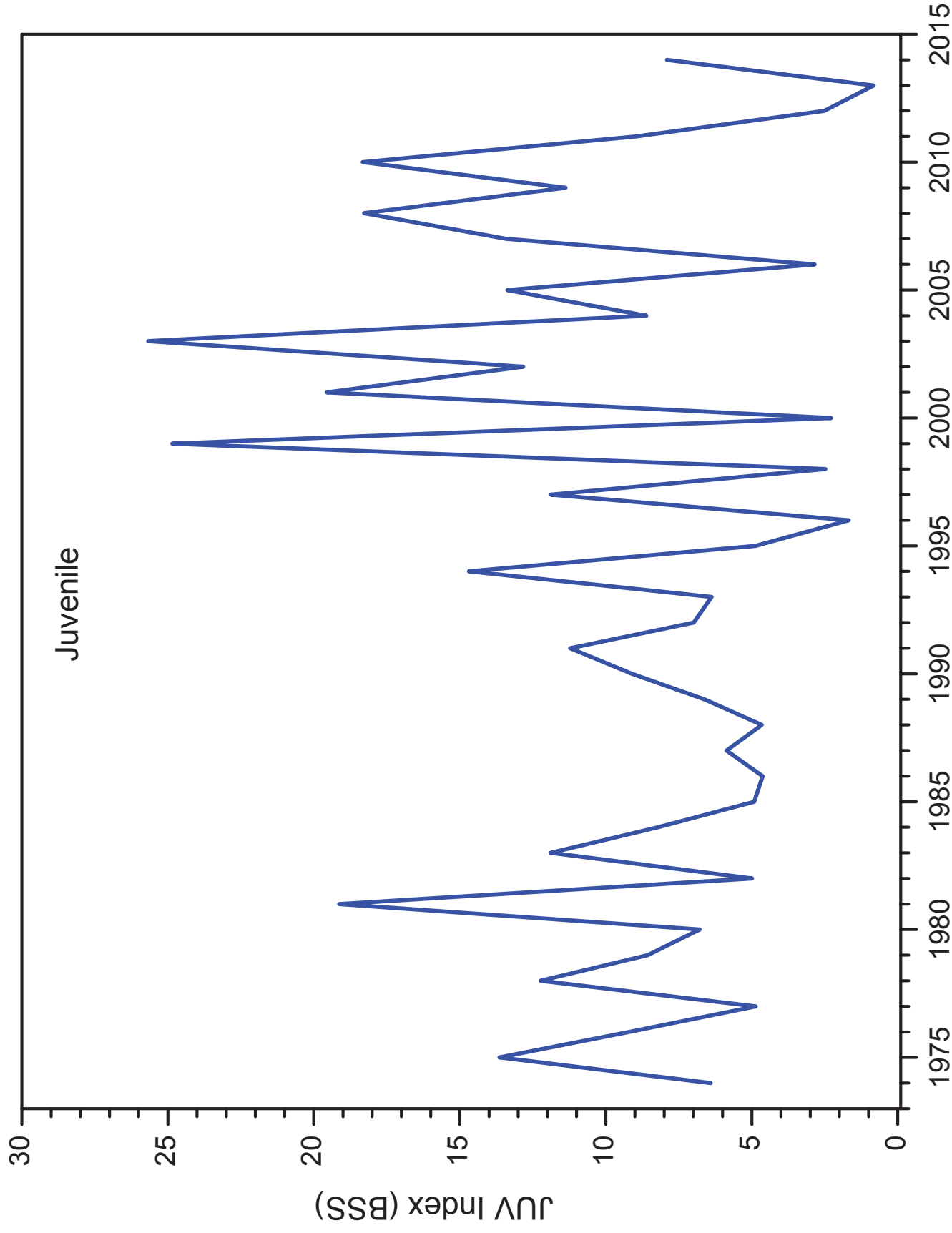


Figure 4-73. Spottail shiner indices of annual abundance based on Beach Seine Survey, 1974-2014.

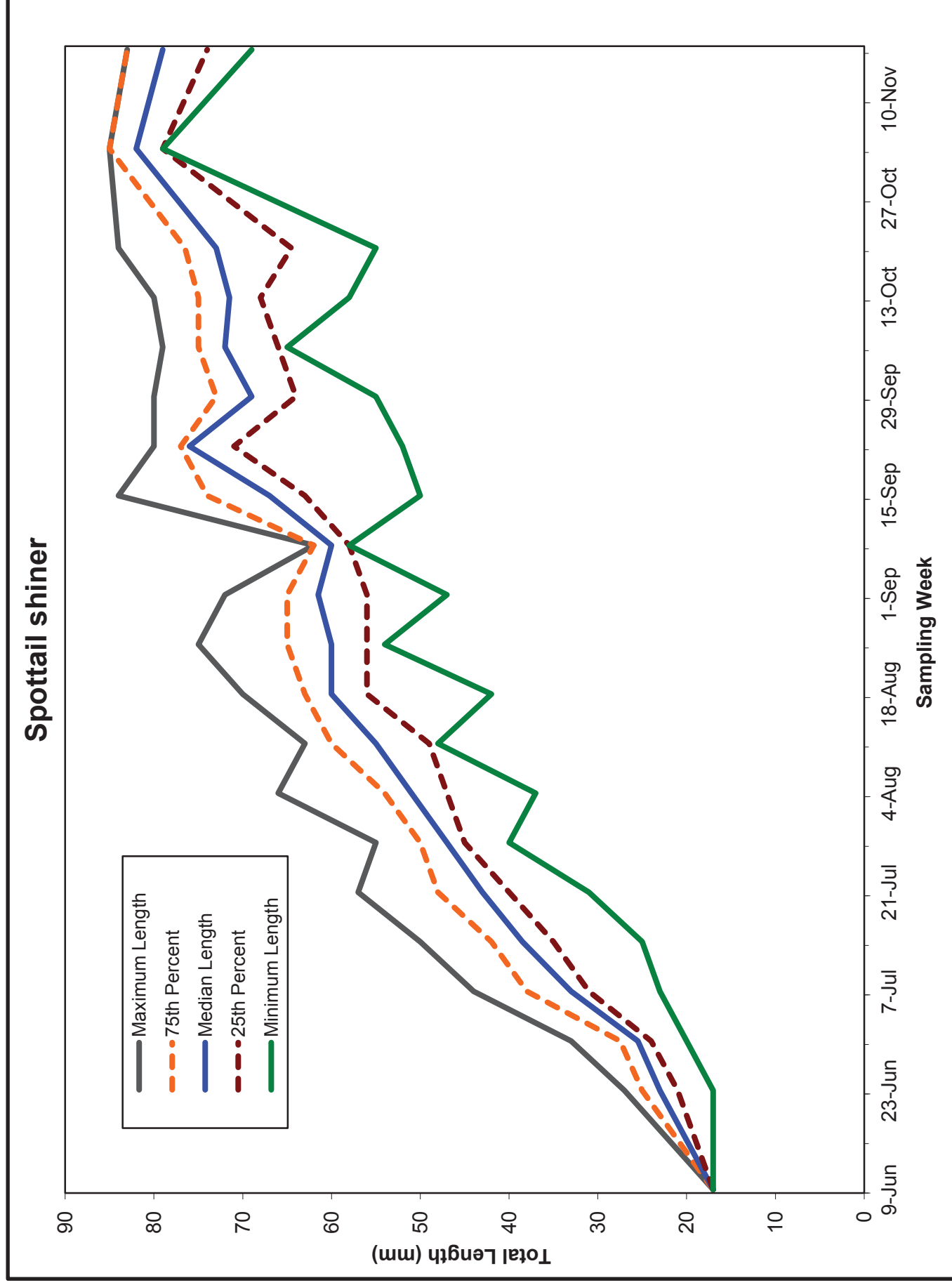


Figure 4-74. Weekly length statistics for young-of-year spottail shiner in the Hudson River estuary, 2014.

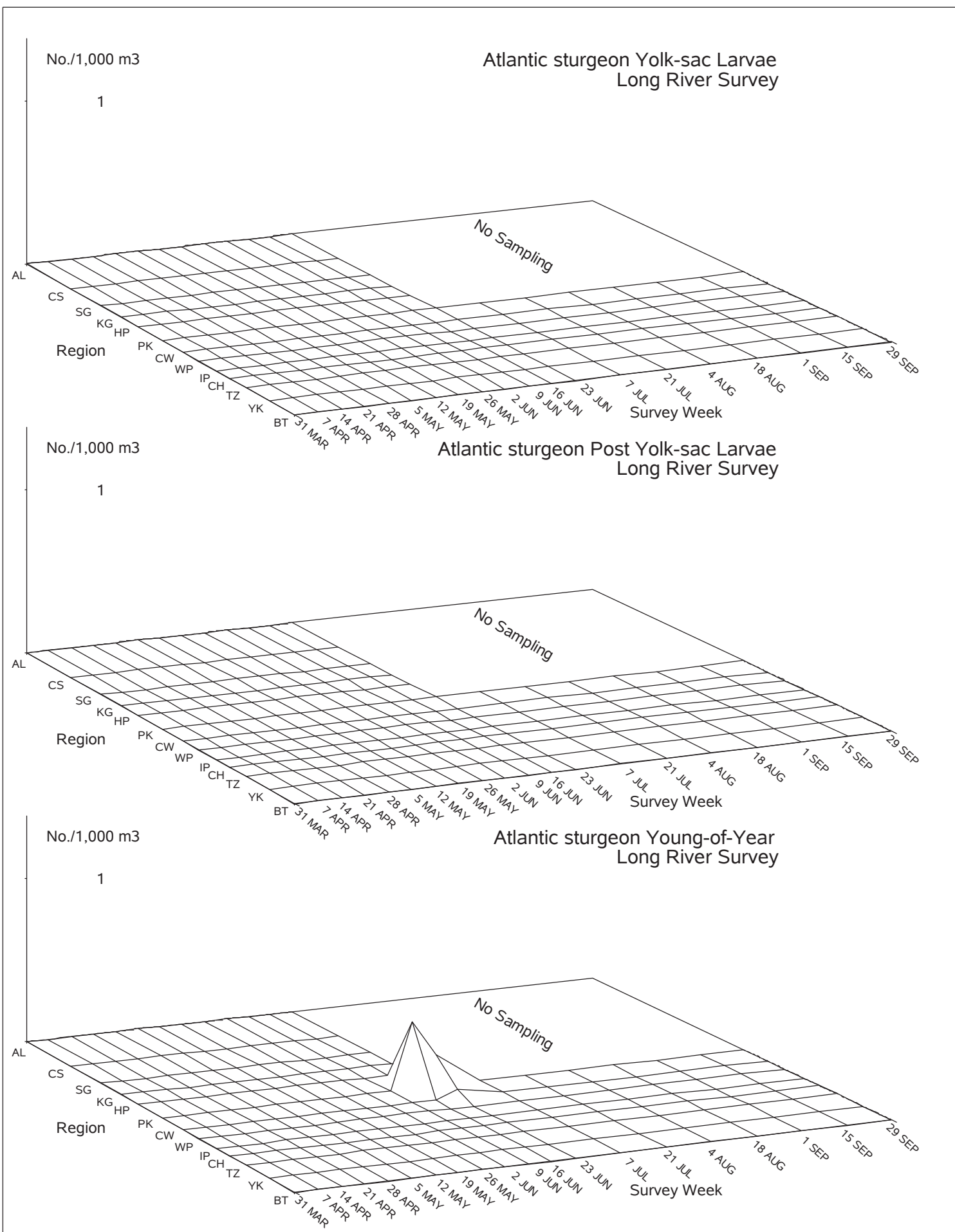


Figure 4-75. Spatiotemporal distribution of yolk-sac, post yolk-sac larval, and young-of-year Atlantic sturgeon in the Hudson River estuary based on the 2014 Long River Survey.

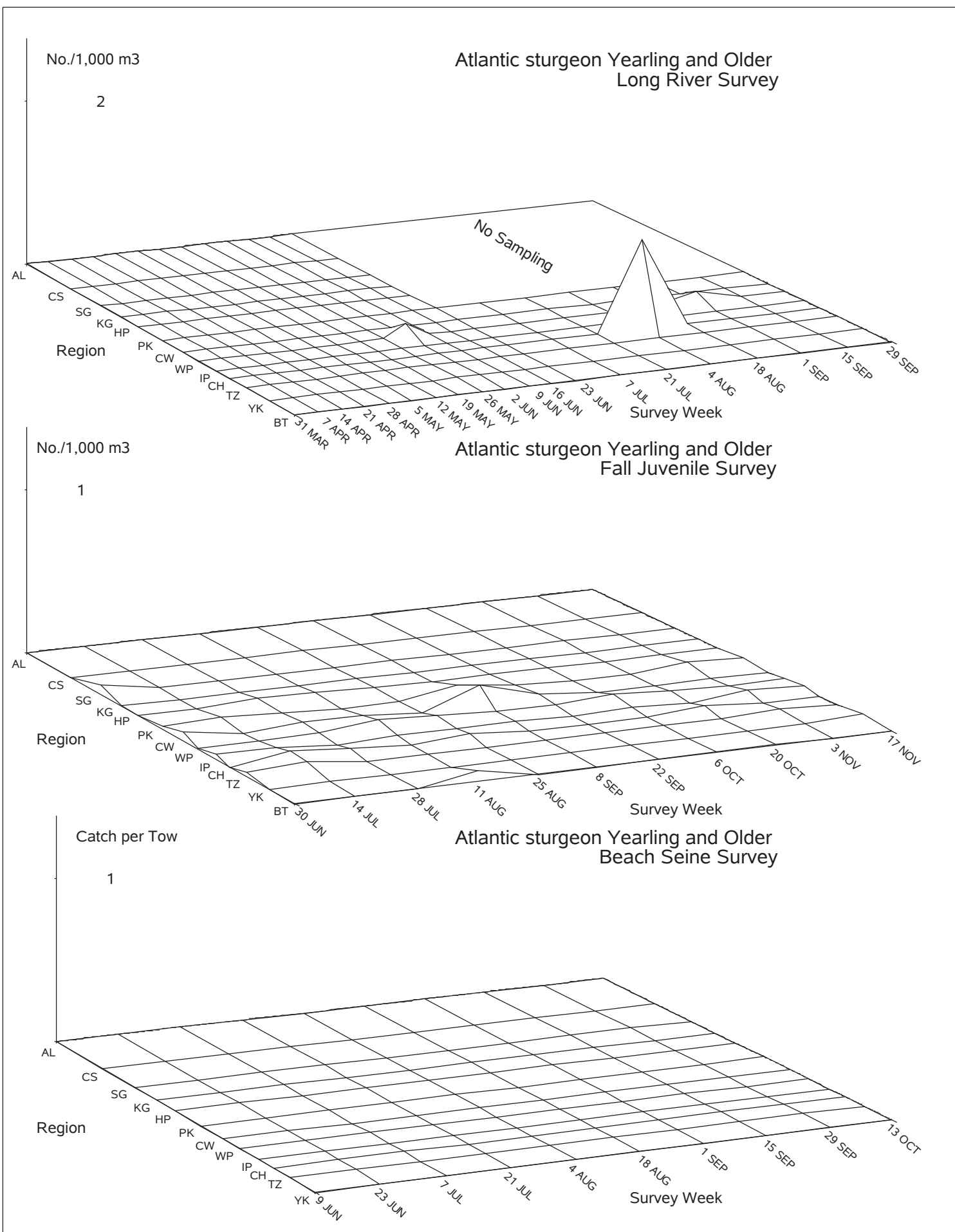


Figure 4-76. Spatiotemporal distribution of yearling and older Atlantic sturgeon in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

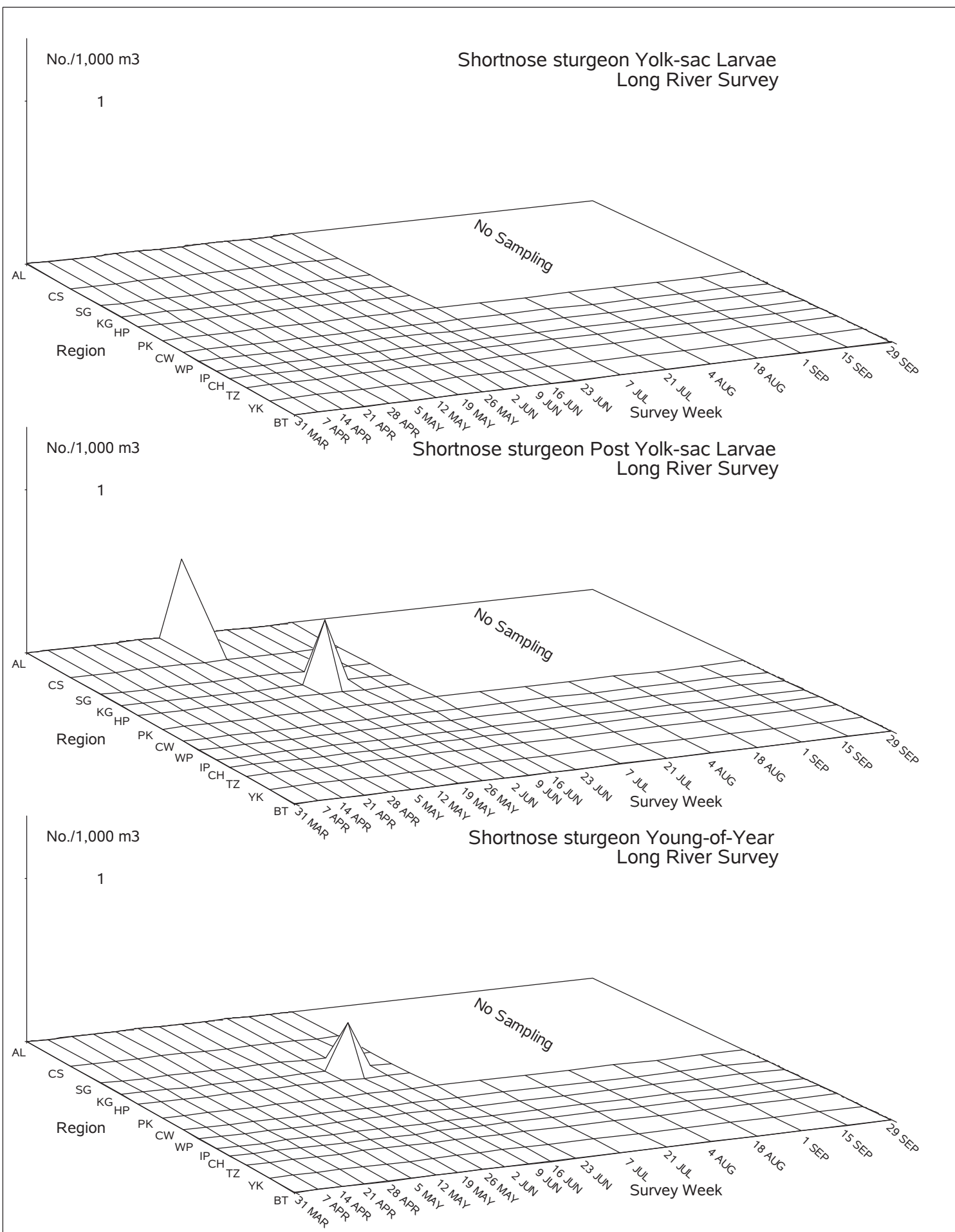


Figure 4-77. Spatiotemporal distribution of yolk-sac, post yolk-sac larval, and young-of-year shortnose sturgeon in the Hudson River estuary based on the 2014 Long River Survey.

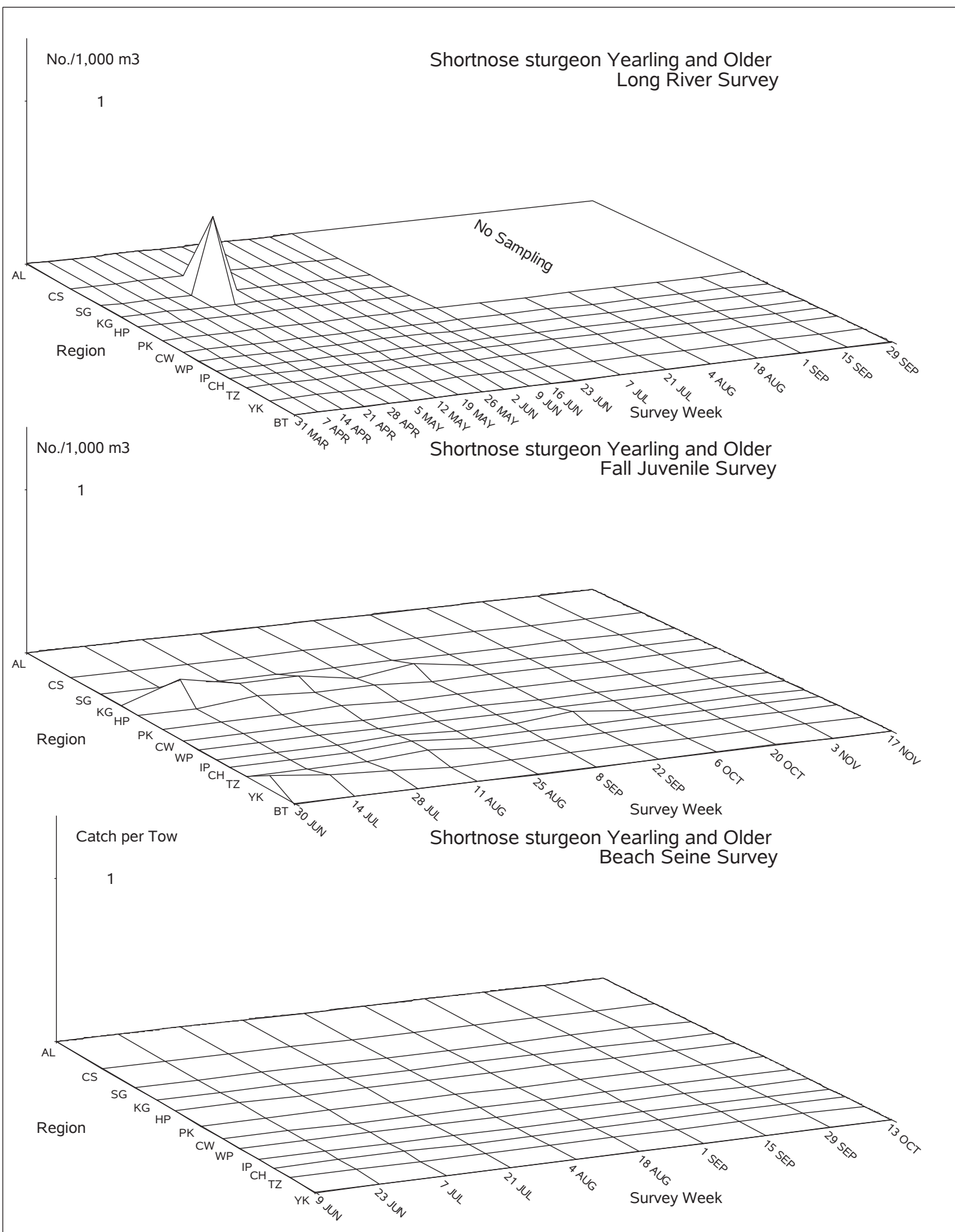


Figure 4-78. Spatiotemporal distribution of yearling and older shortnose sturgeon in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

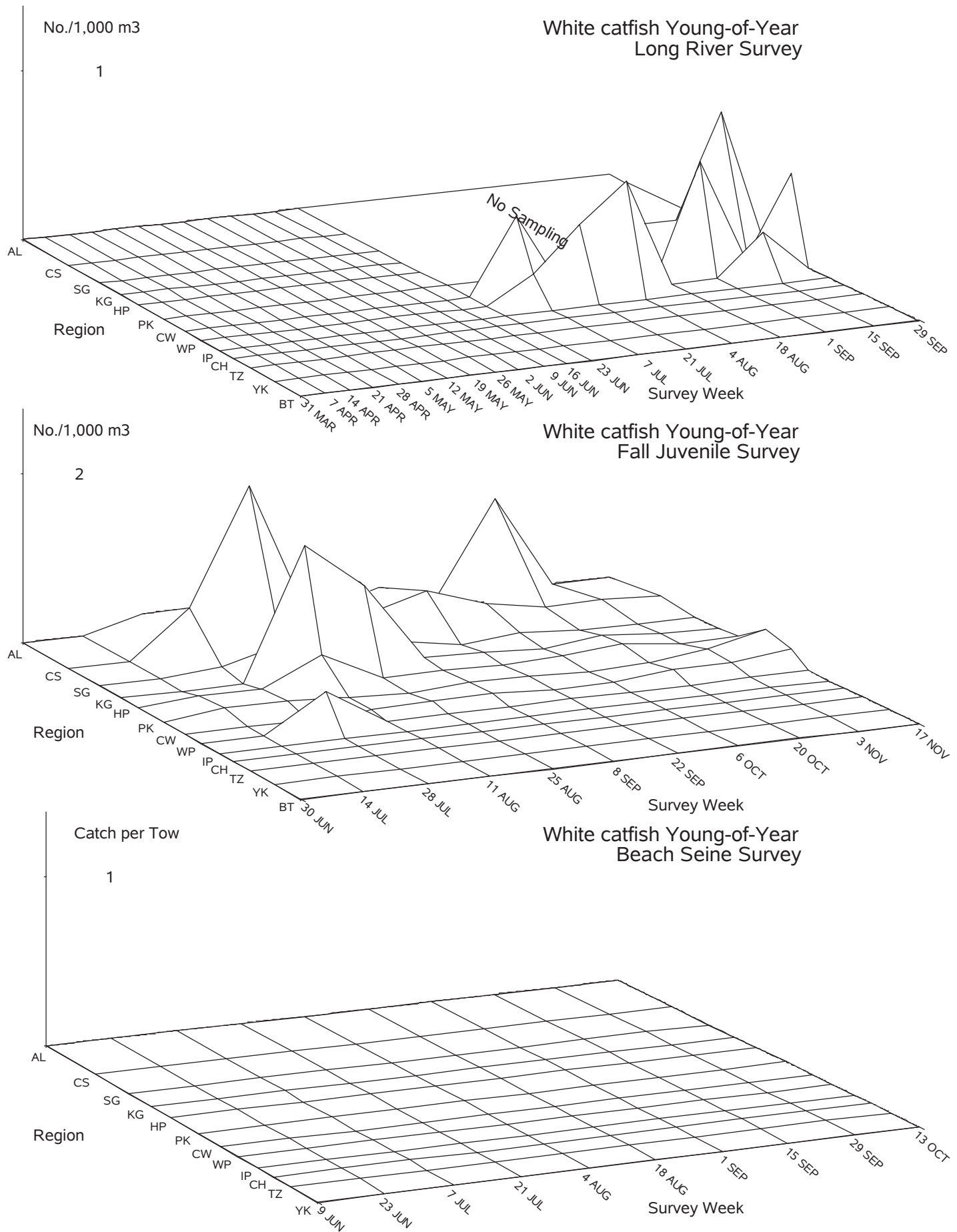


Figure 4-79. Spatiotemporal distribution of young-of-year white catfish in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

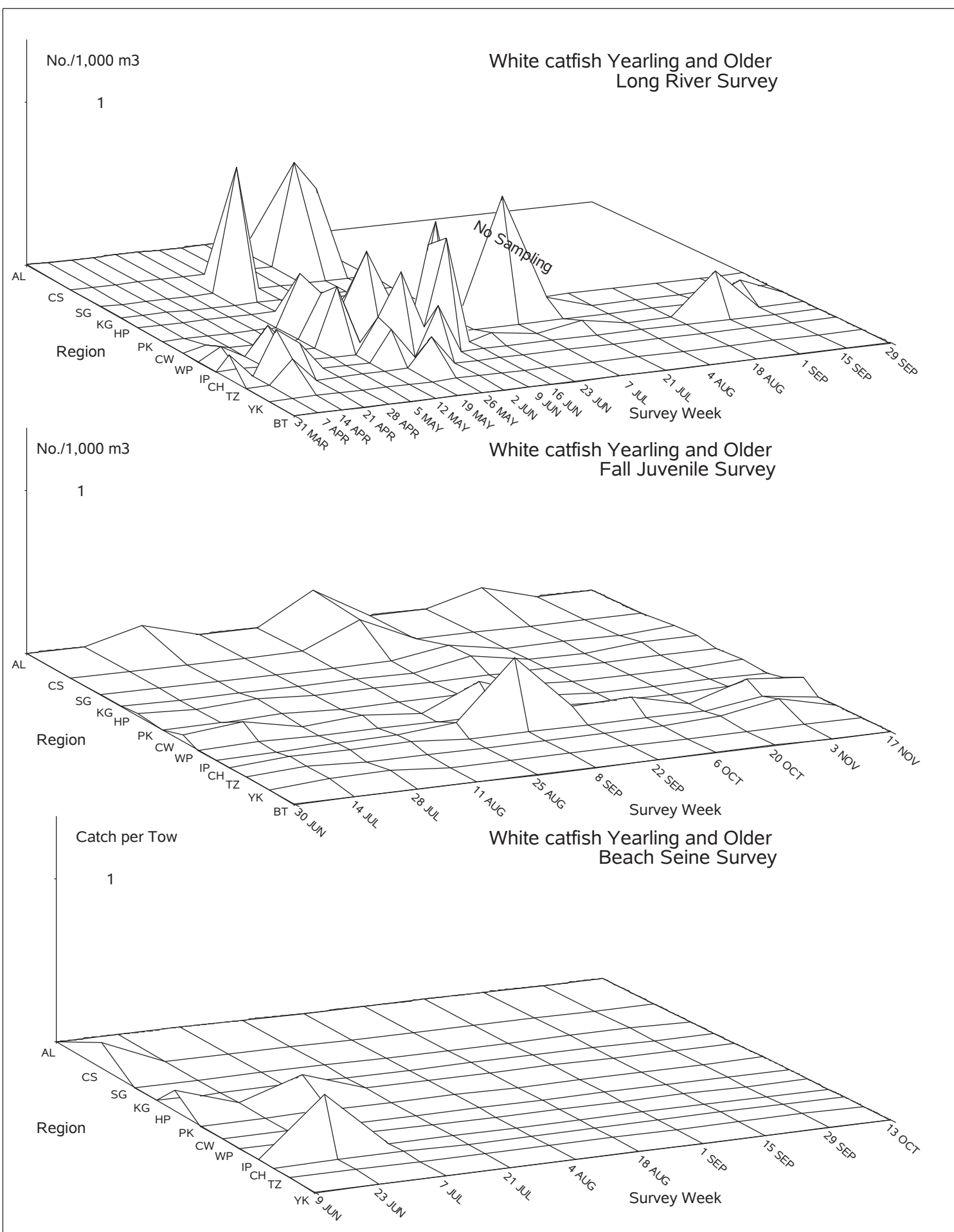


Figure 4-80. Spatiotemporal distribution of yearling and older white catfish in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

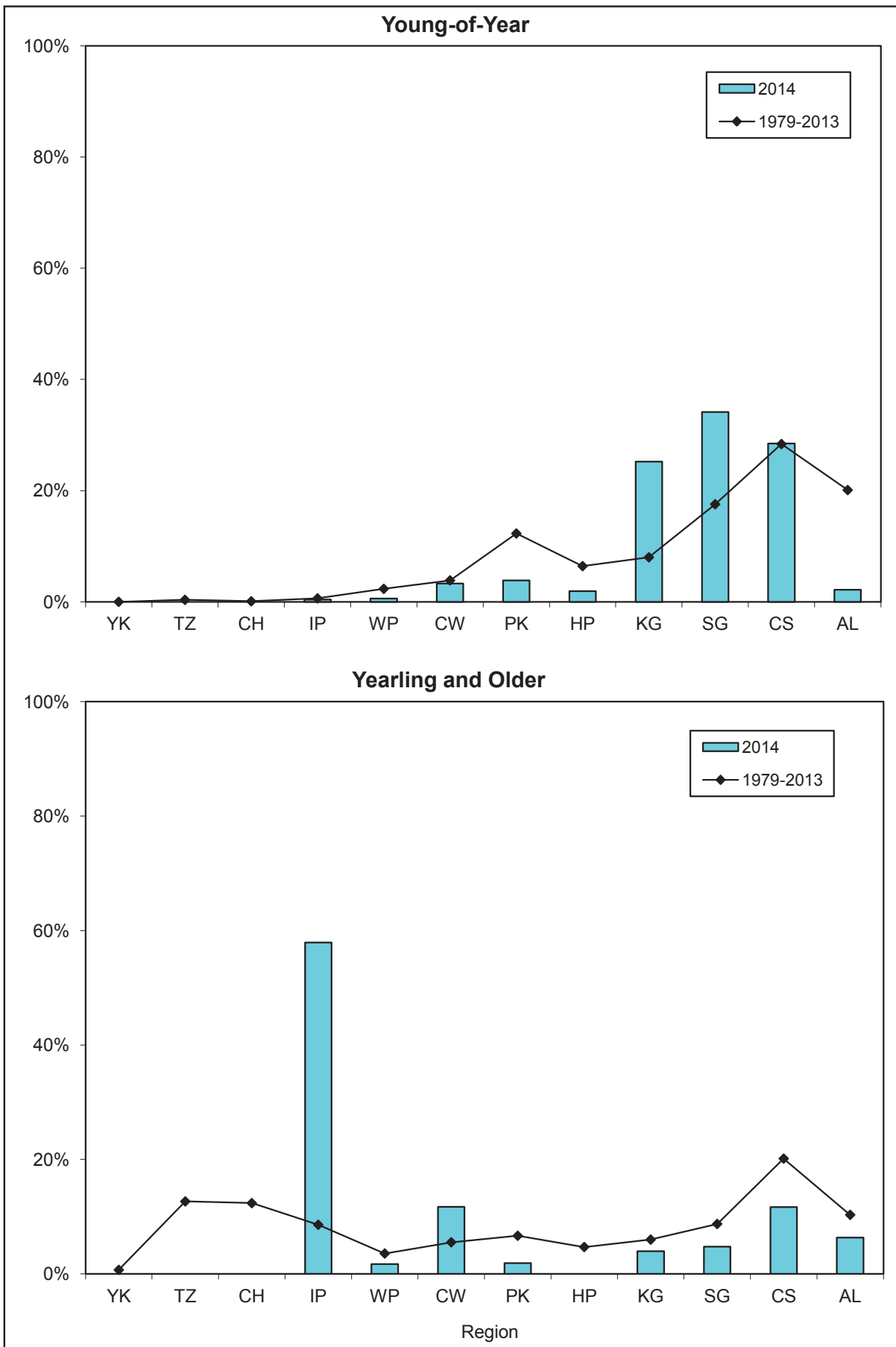


Figure 4-81. Geographic distribution indices for white catfish collected during Fall Juvenile surveys of the Hudson River estuary, 1979-2014.

White catfish

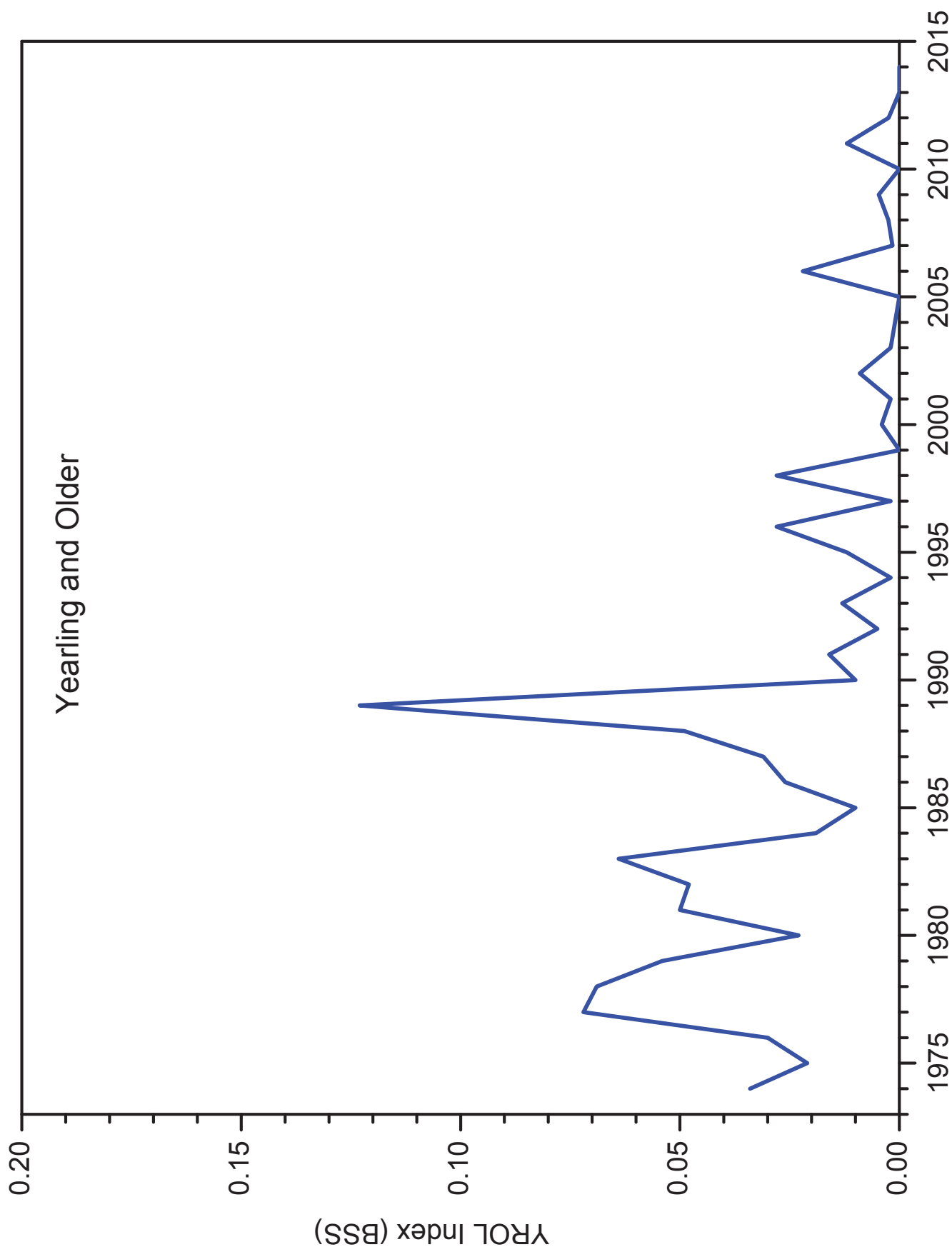


Figure 4-82. White catfish indices of annual abundance based on Beach Seine Survey, 1974-2014.

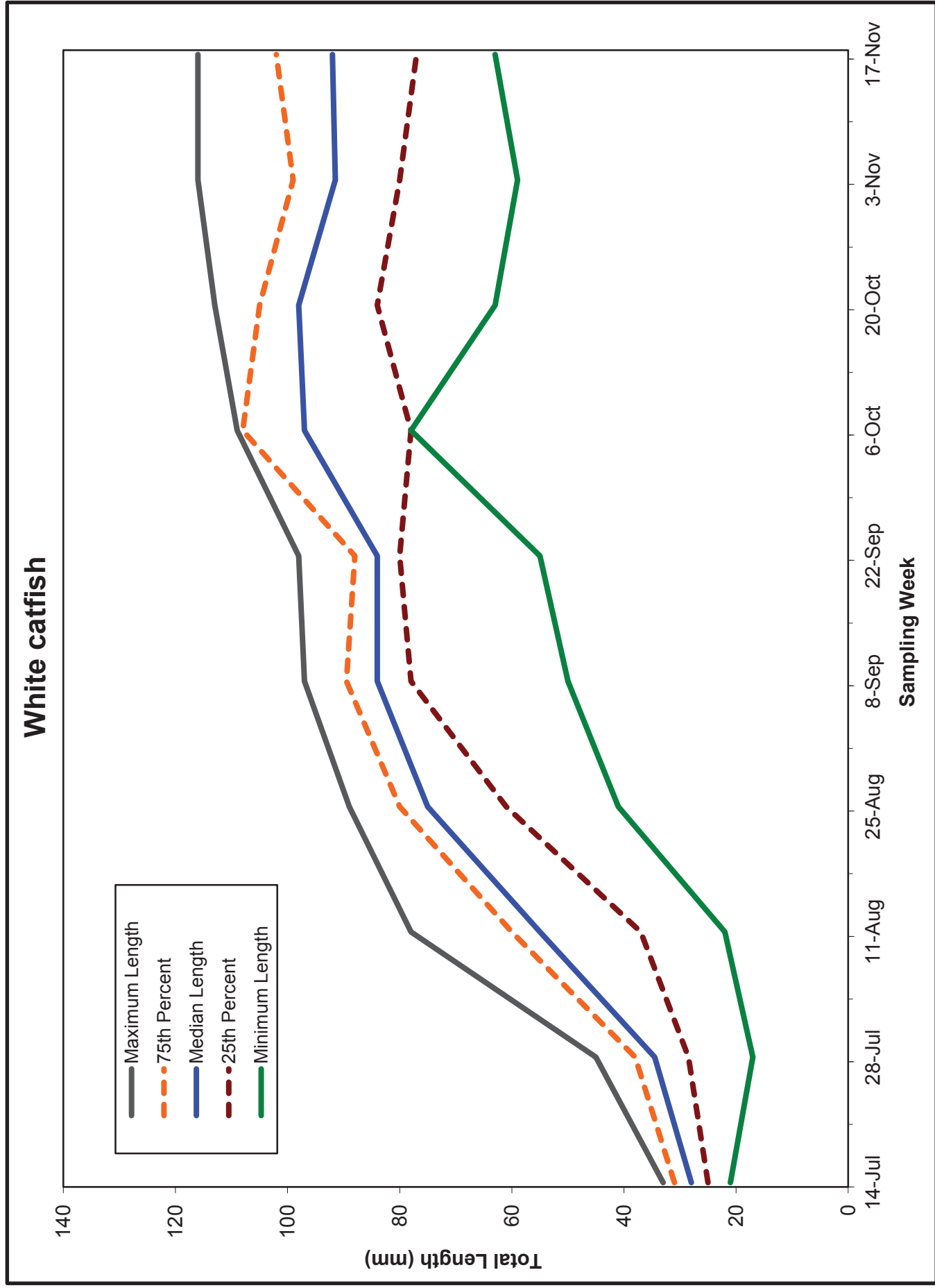


Figure 4-83. Weekly length statistics for young-of-year white catfish in the Hudson River estuary, 2014.

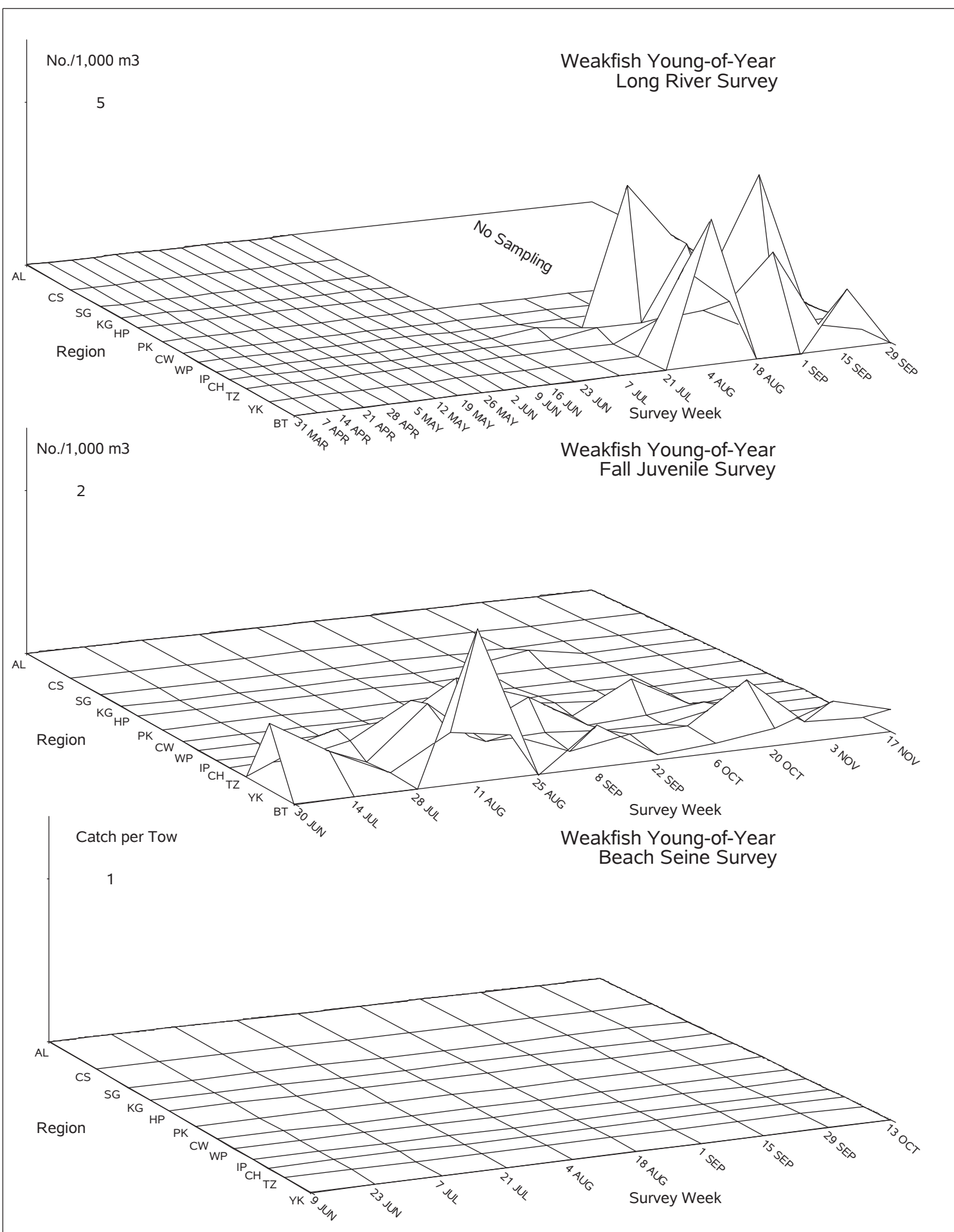


Figure 4-84. Spatiotemporal distribution of young-of-year weakfish in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

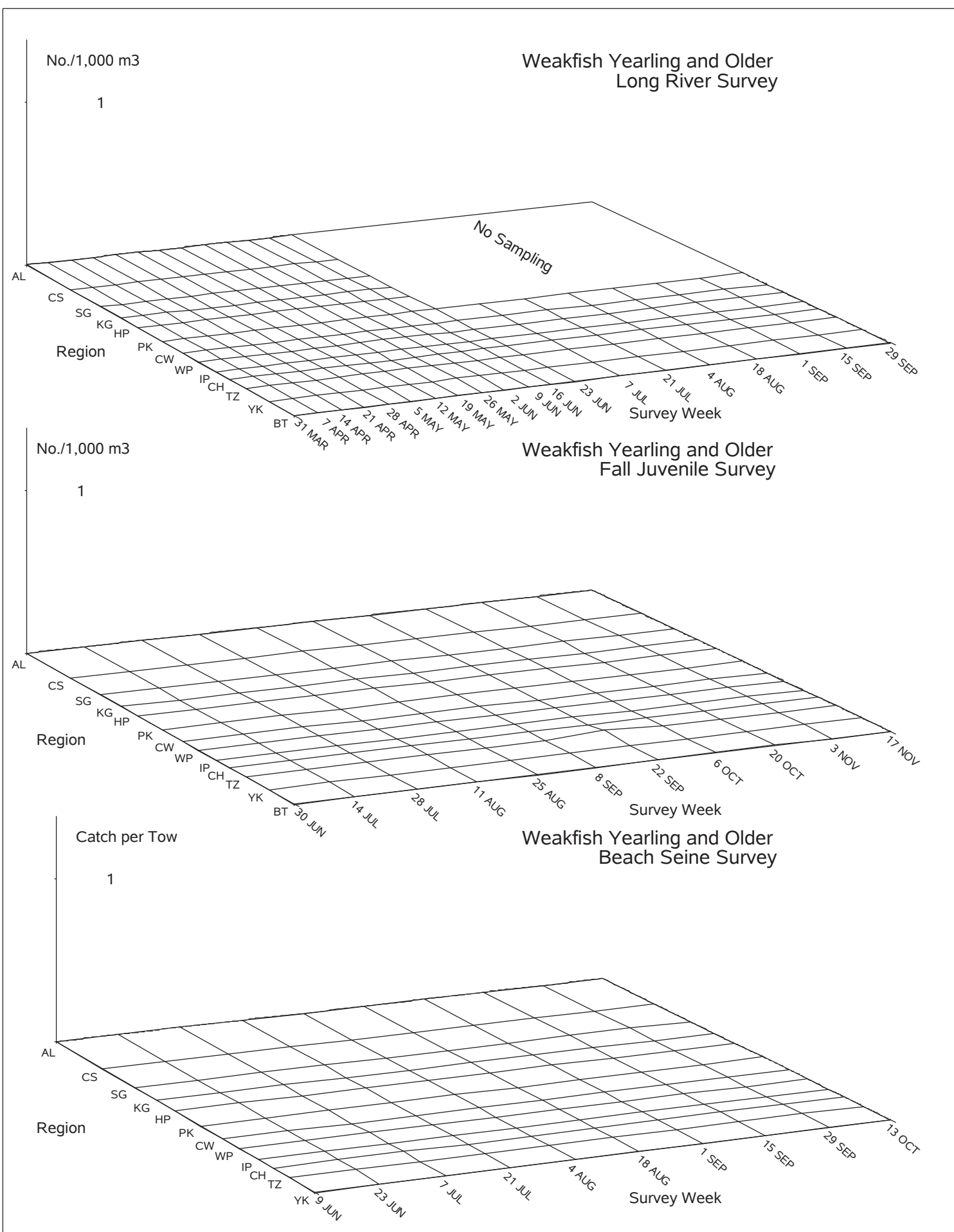


Figure 4-85. Spatiotemporal distribution of yearling and older weakfish in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

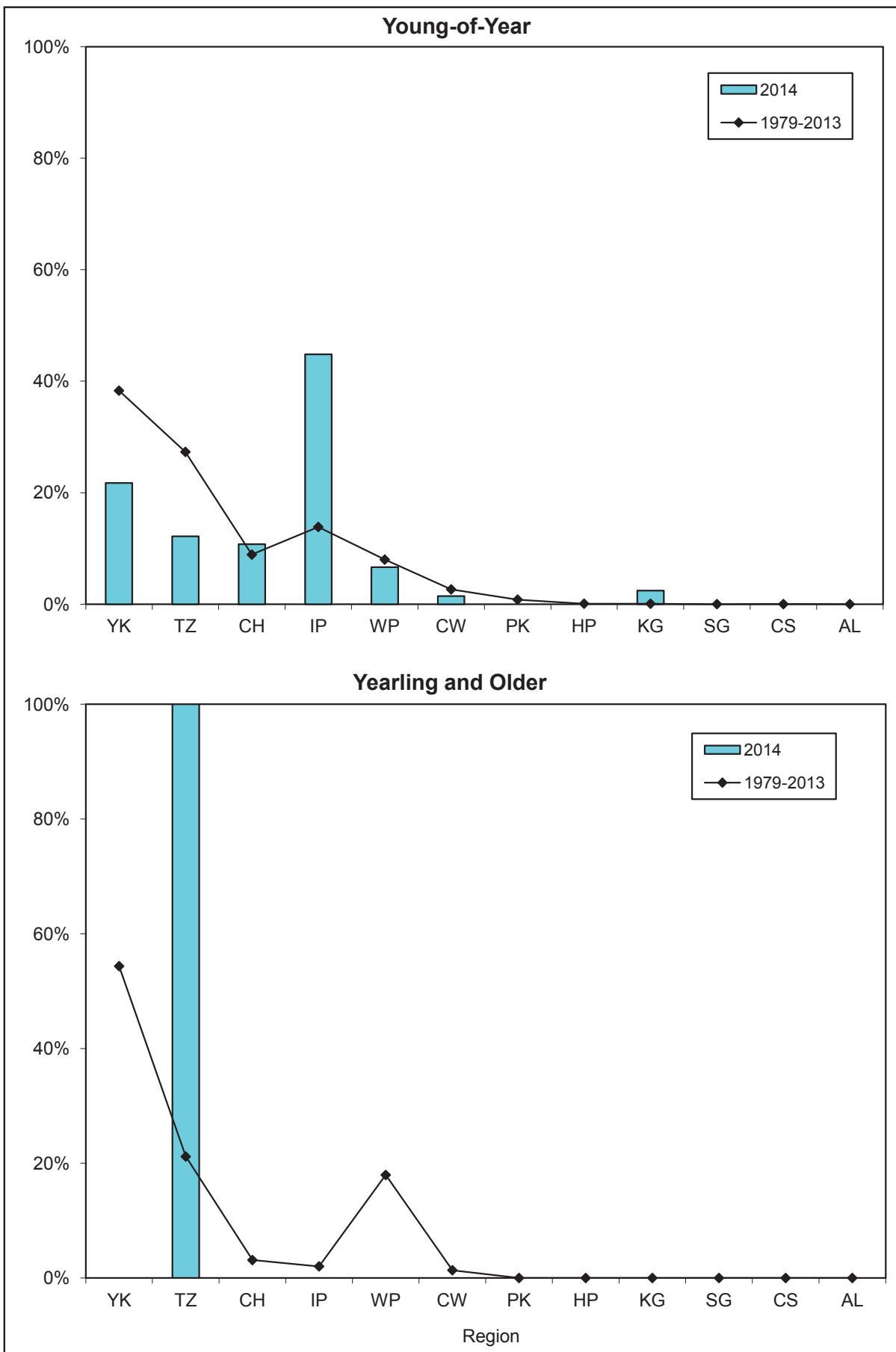


Figure 4-86. Geographic distribution indices for weakfish collected during Fall Juvenile surveys of the Hudson River estuary, 1979-2014.

Weakfish

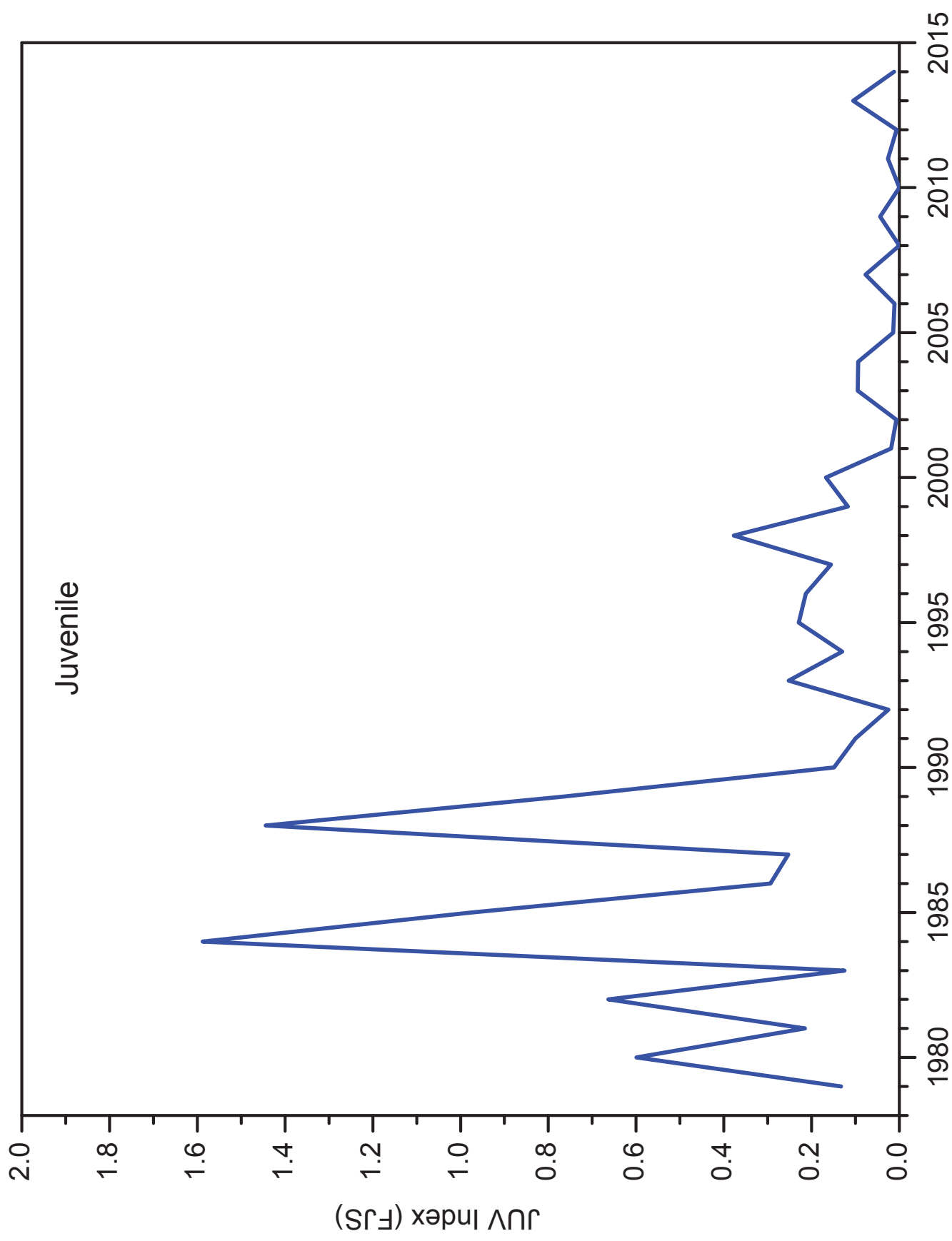


Figure 4-87. Weakfish indices of annual abundance based on Fall Juvenile Survey, 1979-2014.

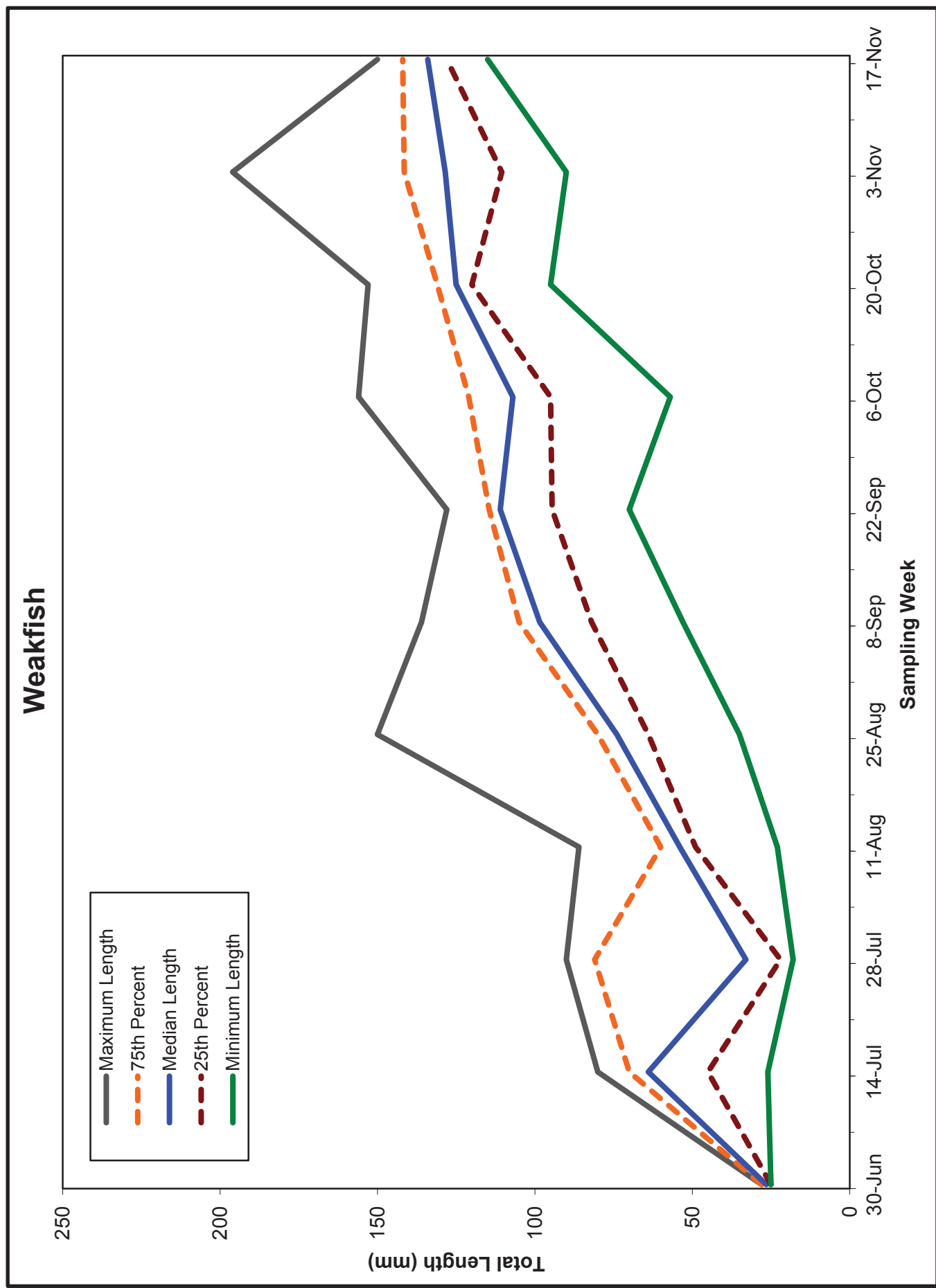


Figure 4-88. Weekly length statistics for young-of-year weakfish in the Hudson River estuary, 2014.

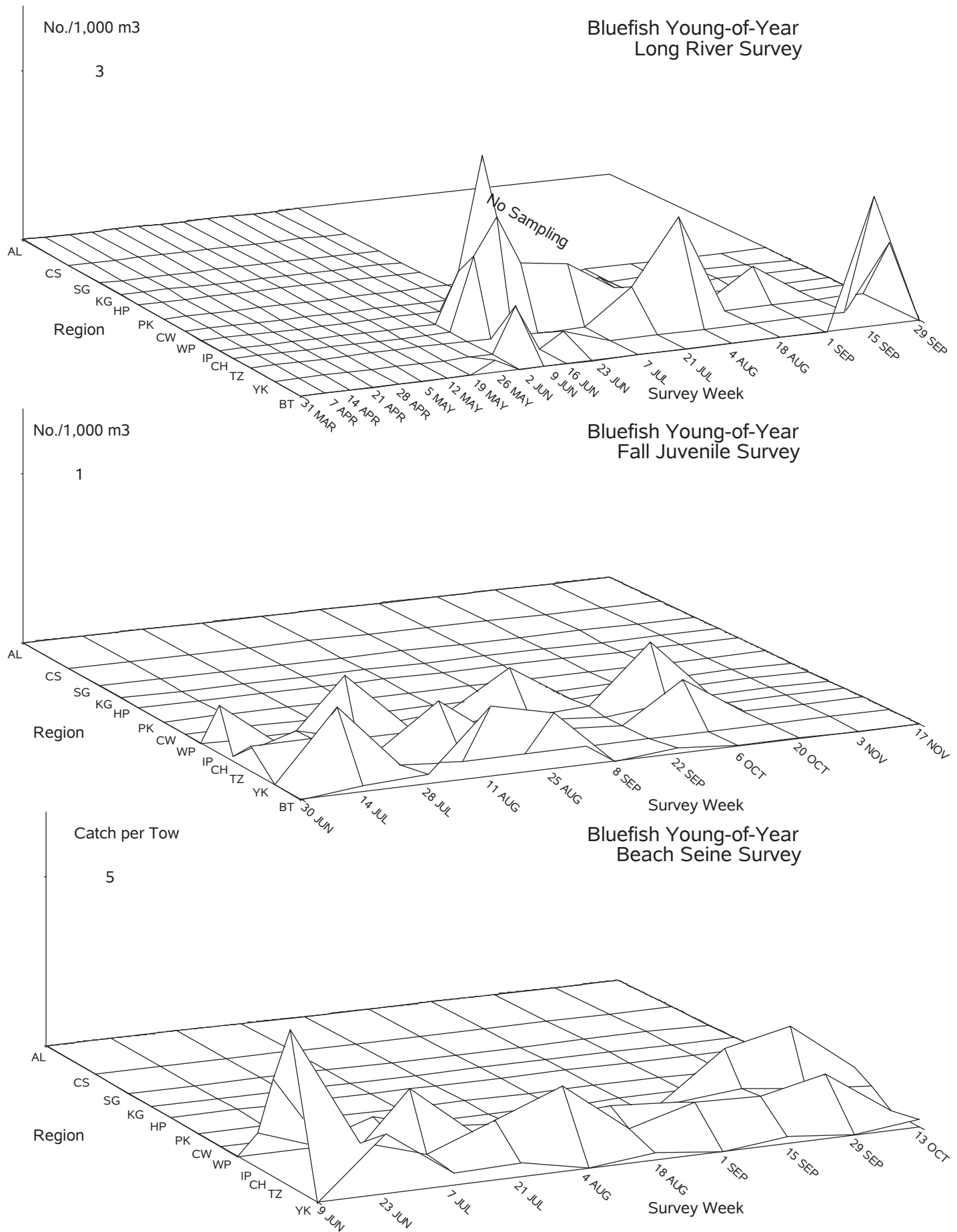


Figure 4-89. Spatiotemporal distribution of young-of-year bluefish in the Hudson River estuary based on the 2014 Long River, Fall Juvenile, and Beach Seine surveys.

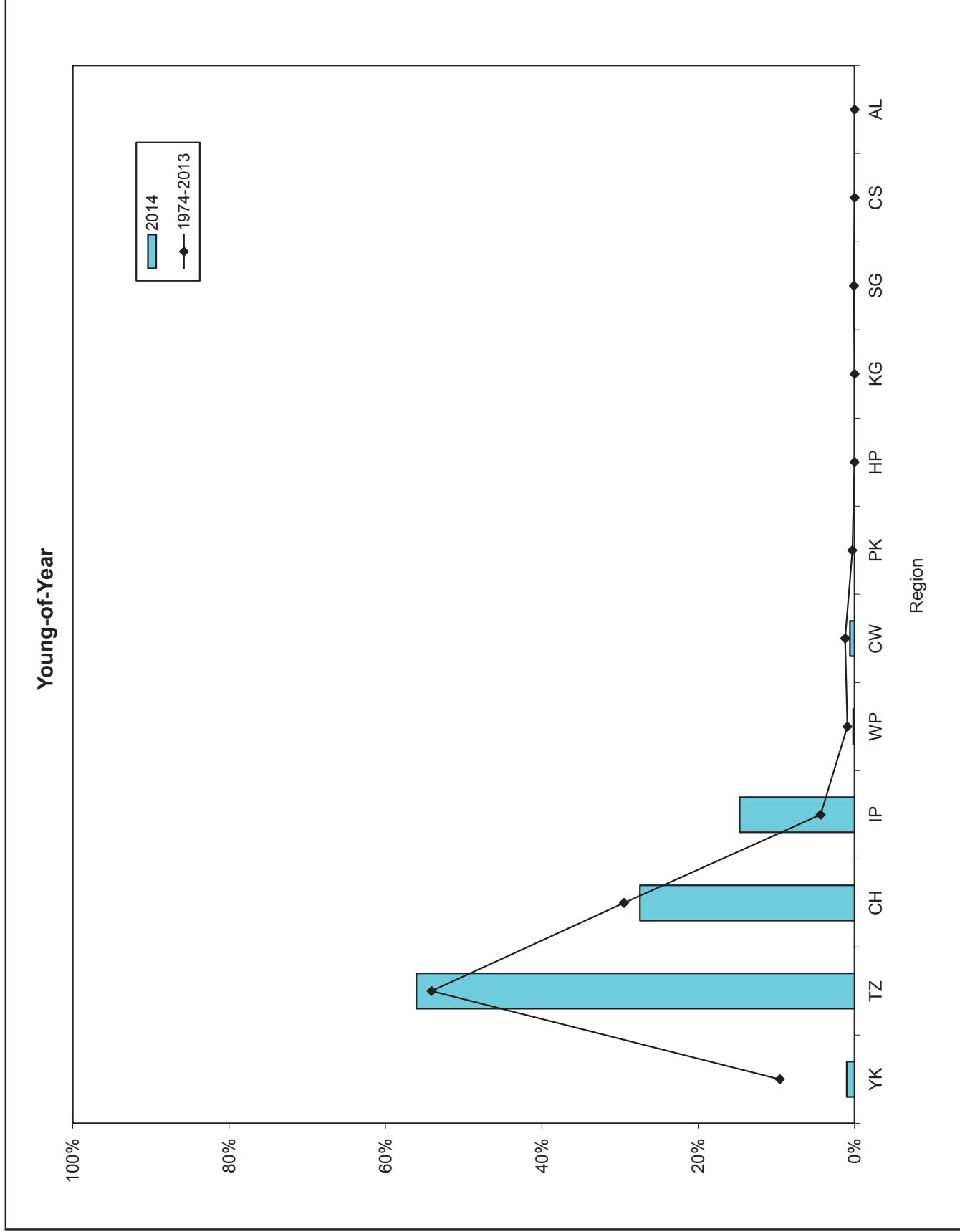


Figure 4-90. Geographic distribution indices for bluefish collected during Beach Seine surveys of the Hudson River estuary, 1974-2014.

Bluefish

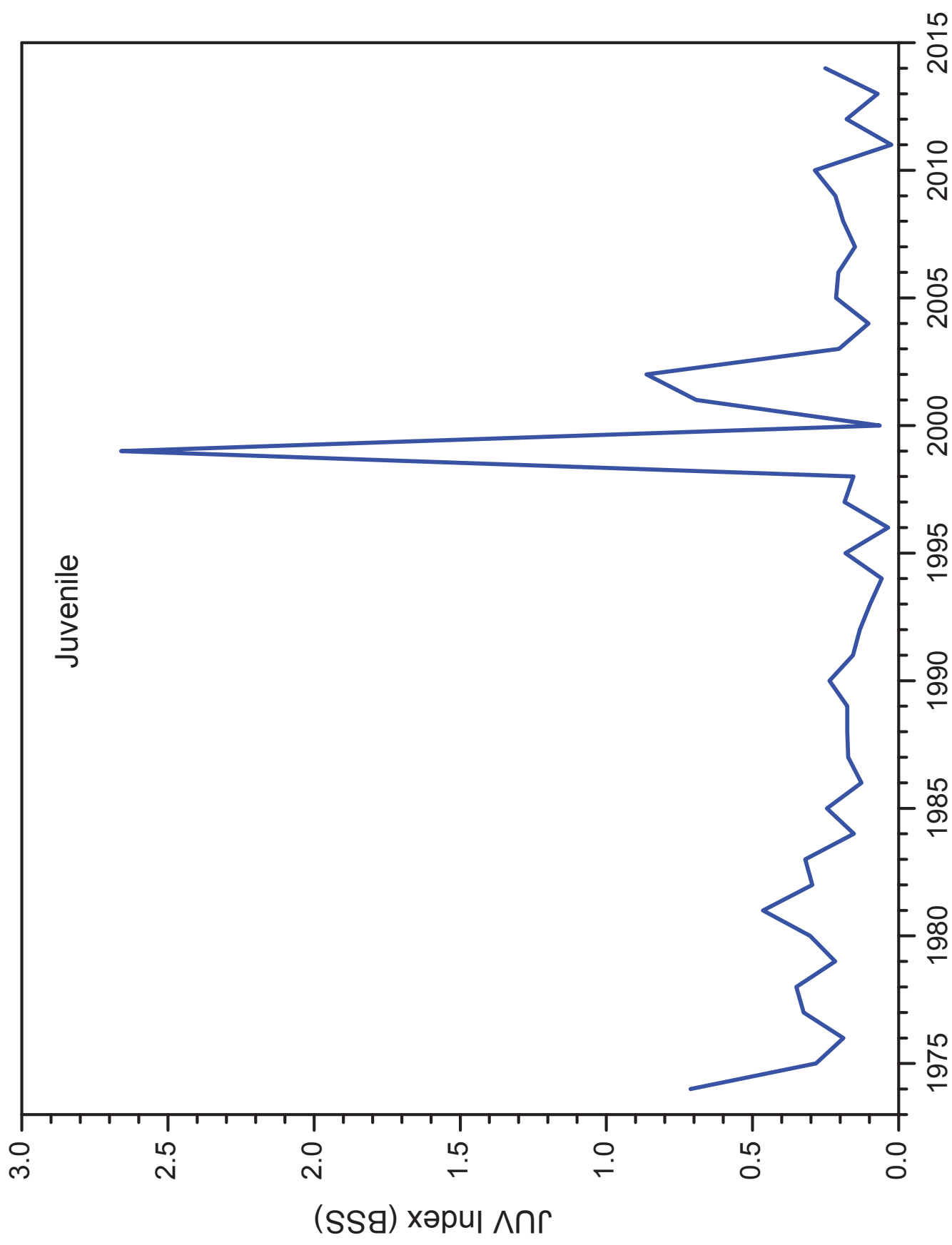


Figure 4-91. Bluefish indices of annual abundance based on Beach Seine Survey, 1974-2014.

Table 4-1 Species Composition of Fish Collected During Hudson River Studies from 1974 to 2014

Common Name	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Anadromous																											
Alewife	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
American shad	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Atlantic sturgeon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Atlantic tomcod	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Blueback herring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Hickory shad	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Rainbow smelt	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sea lamprey	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Striped bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Total	8	9	7	7	8	9	8	8	7	8	8	7	8	7	8	7	8	7	7	7	7	8	7	8	9	8	
Catadromous																											
American eel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Estuarine																											
Atlantic silverside	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Banded killifish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Fat sleeper	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Fourspine stickleback	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Hogchoker	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Inland silverside	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Lined seahorse	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Mummichog	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Northern pipefish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Shortnose sturgeon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Threespine stickleback	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
White catfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
White mullet	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
White perch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Total	12	11	12	12	11	12	12	11	12	12	12	12	13	11	12	12	13	13	11	12	10	12	11	12	11	13	
Freshwater																											
Black bullhead	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Black crappie	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Blacknose dace	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Bluegill	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Bluntnose minnow	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Bridle shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Brindled madtom	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Brook silverside	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Brook stickleback	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Table 4-1 (Continued)

[illegible]

Table 4-1 (Continued)

Common Name	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
White bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White crappie	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White sucker	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Yellow bullhead	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Yellow perch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total	37	36	40	42	38	36	38	30	23	23	27	26	24	28	30	28	26	30	31	29	30	29	35	30	35	33
Marine																										
American sand lance																										
<i>Ammodytes</i> sp.		X	X	X	X	X	X	X			X	X														
Atlantic cod			X	X		X	X																			
Atlantic croaker																										
Atlantic cutlassfish																										
Atlantic herring																										
Atlantic mackerel																										
Atlantic menhaden																										
Atlantic needlefish																										
Atlantic searail																										
Bay anchovy																										
Black drum																										
Black seabass																										
Blackcheek																										
tonguefish																										
Bluefish																										
Butterfish																										
Cobia																										
Conger eel																										
Crevalle jack																										
Cunner																										
Cusk																										
Feather blenny																										
Fourbeard rockling																										
Fourspot flounder																										
Goosefish																										
Gray snapper																										
Grubby																										
Gulf Stream flounder																										
Harvestfish																										
Hightail goby																										
Inshore lizardfish																										
King mackerel																										
Longhorn sculpin																										
Lookdown																										
Moontfish																										
Naked goby																										
Northern kingfish																										
Northern puffer																										
Northern searobin																										

Table 4-1 (Continued)

Common Name	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Northern stargazer	X						X		X	X	X	X			X		X		X	X	X	X	X	X	X	X
Orangespotted filefish													X													
Oyster toadfish																			X	X		X				X
Permit																			X	X						
Pigfish																			X	X						
Pinfish																										
Pink wormfish																										
Pollack																								X		
Radiated shanny																										X
Red hake	X		X			X	X	X			X	X			X	X	X	X		X	X	X	X	X	X	X
Rock gunnel			X												X	X	X	X		X	X	X	X	X	X	X
Rough silverside			X			X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Scup	X																									
Seaboard goby		X					X								X			X		X				X		X
Sea raven							X																			
Sheepshead minnow								X																		
Silver anchovy																										
Silver hake	X	X										X	X		X	X	X	X		X	X	X	X	X	X	X
Silver perch	X					X					X	X														
Skillefish																										
Smallmouth flounder							X		X		X	X			X	X	X	X		X	X	X	X	X	X	X
Spanish mackerel												X	X	X	X	X	X	X		X	X	X	X	X	X	X
Speckled worm eel						X					X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Spot	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X
Spotfin butterflyfish									X			X														
Spotfin mojarra																										
Spotted goatfish																										
Spotted hake							X			X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Striped anchovy						X			X		X	X														
Striped burrfish																										
Striped cuskeel																										
Striped killifish							X					X	X	X	X	X	X	X		X	X	X	X	X	X	X
Striped mullet	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Striped searobin		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Summer flounder	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Tautog		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Weakfish		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Windowpane		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Winter flounder		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Witch flounder		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Wymouth																										
Yellowtail flounder	X																		X	X	X	X	X	X	X	X
Total	24	24	24	20	16	26	33	24	25	20	28	35	35	29	41	34	35	38	42	37	37	39	39	40	45	49
All Categories	82	81	84	82	74	84	92	74	68	64	76	81	81	76	92	82	83	89	92	86	85	89	93	91	101	104
Total																										

Table 4-1 (Continued)

Common Name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Anadromous															
Alewife	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American shad	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic sturgeon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic tomcod	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Blueback herring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hickory shad						X									
Rainbow smelt	X	X	X				X	X	X				X		
Sea lamprey							X	X	X						
Striped bass	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Total	7	7	7	6	6	7	8	8	8	7	6	8	7	8	7
Catadromous															
American eel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Estuarine															
Atlantic silverside	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Banded killifish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fat sleeper															
Fourspine stickleback	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hogchoker	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Inland silverside	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lined seahorse	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mummichog	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Northern pipefish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shortnose sturgeon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Threespine stickleback	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White catfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White mullet	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White perch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total	11	12	13	12	10	11	12	12	12	11	12	11	12	11	10
Freshwater															
Black bullhead				X											
Black crappie	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Blacknose dace															
Bluegill	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bluntnose minnow	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bride shiner															
Brindled madtom															
Brook silverside															
Brook stickleback															
Brook trout															
Brown bullhead	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brown trout															
Carp	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Central mudminnow															

Table 4-1 (Continued)

Common Name	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Chain pickerel	X		X		X	X			X	X	X			X	X
Channel catfish	X	X	X	X	X		X	X	X	X	X	X	X		
Comely shiner															
Common shiner		X							X		X		X	X	X
Creek chub				X											
Cutlips minnow									X						X
Eastern mudminnow															
Emerald shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fatfish				X	X	X	X		X	X	X	X	X	X	
Fathead minnow				X	X	X	X		X	X	X	X	X	X	X
Freshwater drum	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Gizzard shad	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Golden shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Goldfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Grass carp					X				X						
Grass pickerel															
Green sunfish				X	X	X	X	X	X	X	X	X	X	X	X
Largemouth bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Logperch															
Longear sunfish				X	X	X	X	X	X	X	X	X	X	X	X
Longnose dace															
Longnose madtom															
Mimic shiner															
Northern hog sucker	X		X	X	X	X		X				X		X	X
Northern pike	X	X	X	X	X		X	X				X	X	X	X
Pugnose shiner															
Pumpkinseed	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rainbow trout															
Redbreast sunfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Redfin pickerel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rock bass	X	X	X	X	X	X	X	X	X	X	X	X			X
Rosyface shiner															
Rudd					X			X	X	X	X				
Satinfin shiner		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shield darter															
Silvery minnow	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Slimy sculpin															
Smallmouth bass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotfin shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spottail shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Swallowtail shiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tessellated darter															
Tiger muskellunge	X														
Trout perch				X				X	X	X	X	X	X	X	X
Walleye	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
White bass															
White crappie															
White sucker	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Yellow bullhead															
Yellow perch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 4-1 (Continued)

Common Name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total	29	27	28	35	35	29	28	28	34	34	31	33	27	30	34
Marine															
American sand lance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Ammodytes</i> sp.															
Atlantic cod		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic croaker	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic cutlassfish															
Atlantic herring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic mackerel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic menhaden	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic needlefish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Atlantic seahorse															
Bay anchovy	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Black drum															
Black seabass								X							
Blackcheek tonguefish															
Bluefish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Butterfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cobia															
Conger eel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Crevalle jack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cunner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cusk	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Feather blenny	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fourbeard rockling	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fourspot flounder															
Goosefish															
Gray snapper		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Grubby	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Gulf Stream flounder															
Harvestfish															
Hightail goby															
Inshore lizardfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
King mackerel															
Longhorn sculpin															
Lookdown	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Moonfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Naked goby	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Northern kingfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Northern puffer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Northern searobin	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Northern stargazer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Orangespotted filefish															
Oyster toadfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Permit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pigfish															
Pinfish															

Table 4-1 (Continued)

Common Name	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Pink wormfish															X
Pollack												X		X	
Radiated shanny															
Red hake		X		X		X	X		X	X				X	X
Rock gunnel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rough silverside	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Scup	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Seaboard goby	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sea raven															
Sheepshead minnow															
Silver anchovy															
Silver hake	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Silver perch	X		X		X	X	X	X	X	X	X	X	X	X	X
Skilltfish															
Smallmouth flounder	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spanish mackerel					X										
Speckled worm eel	X		X									X			
Spot	X	X	X	X		X	X		X	X	X	X			
Spotfin butterflyfish															
Spotfin mojarra															
Spotted goatfish															
Spotted hake	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Striped anchovy															
Striped burrfish						X									
Striped cuskeel	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Striped killifish															
Striped mullet	X		X			X	X	X	X	X	X	X	X	X	X
Striped searobin	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Summer flounder	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tautog	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Weakfish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Windowpane	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Winter flounder	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Witch flounder															
Wrymouth															
Yellowtail flounder	X	X	X		X				X	X	X	X	X	X	X
Total	46	43	44	39	40	42	40	40	43	45	38	46	43	49	47
All Categories	94	90	93	93	92	90	89	89	98	98	88	99	90	99	99
Total															

Table 4-2 Species Composition of Fish Collected in Each of the Hudson River Surveys During 2014

<u>Common Name</u>	<u>BSS</u>	<u>FSS</u>	<u>LRS</u>
<u>Anadromous</u>			
Alewife	X	X	X
American shad	X	X	X
Atlantic sturgeon		X	X
Atlantic tomcod	X	X	X
Blueback herring	X	X	X
Hickory shad		X	
Striped bass	X	X	X
Total	5	7	6
<u>Catadromous</u>			
American eel	X	X	X
Total	1	1	1
<u>Estuarine</u>			
Atlantic silverside	X	X	X
Banded killifish	X		X
Hogchoker	X	X	X
Inland silverside			X
Lined sea horse			X
Mummichog	X		X
Northern pipefish	X	X	X
Shortnose sturgeon		X	X
White catfish	X	X	X
White perch	X	X	X
Total	7	6	10
<u>Freshwater</u>			
Black crappie	X		X
Bluegill	X		X
Bridle shiner	X		
Brindled madtom			X
Brook silverside	X		
Brown bullhead	X	X	X
Carp	X	X	X
Central mudminnow			X
Chain pickerel	X		
Channel catfish	X	X	X
Common shiner	X		
Cutlips minnow	X		
Fall fish			X
Freshwater drum	X	X	X
Gizzard shad	X	X	X
Golden shiner	X	X	
Goldfish	X	X	
Largemouth bass	X		
Logperch	X		
(Continued)			

Table 4-2 (Continued)

<u>Common name</u>	<u>BSS</u>	<u>FSS</u>	<u>LRS</u>
<u>Freshwater (continued)</u>			
Northern hog sucker	X		
Northern pike	X		
Pumpkinseed	X		
Redbreast sunfish	X		
Rock bass	X		X
Satinfin shiner	X		
Silvery minnow	X		
Smallmouth bass	X		X
Spotfin shiner	X		
Spottail shiner	X	X	X
Swallowtail shiner	X		
Tesselated darter	X	X	X
Walleye			X
White sucker	X	X	X
Yellow perch	X		X
Total	30	10	17
<u>Marine</u>			
American sand lance			X
Atlantic cod			X
Atlantic croaker	X	X	X
Atlantic herring			X
Atlantic menhaden	X	X	X
Atlantic needlefish	X	X	X
Bay anchovy	X	X	X
Black drum			X
Black sea bass		X	X
Bluefish	X	X	X
Butterfish	X	X	X
Conger eel			X
Crevale jack	X		
Cunner			X
Feather blenny			X
Fourbeard rockling			X
Goosefish			X
Grubby			X
Inshore lizardfish			X
King mackerel	X		
Lookdown		X	
Moonfish		X	X
Naked goby	X	X	X
Northern kingfish	X	X	X
Northern puffer	X	X	X
Northern searobin	X	X	X
Northern stargazer		X	X
Oyster toadfish		X	X
Pink wormfish			X
Rock gunnel			X
Rough silverside			X
(Continued)			

Table 4-2 (Continued)

<u>Common name</u>	<u>BSS</u>	<u>FSS</u>	<u>LRS</u>
<u>Marine (continued)</u>			
Scup			X
Seaboard goby		X	X
Silver perch	X	X	
Skilletfish			X
Smallmouth flounder	X		X
Spotted hake		X	X
Striped anchovy	X		
Striped cuskeel		X	X
Striped mullet	X		
Striped searobin		X	X
Summer flounder	X	X	X
Tautog			X
Weakfish		X	X
Windowpane			X
Winter flounder	X	X	X
Wrymouth			X
Total	18	23	41
<u>Undetermined</u>			
Acipenseridae		X	
Alosa spp.	X	X	X
Centrarchidae	X		X
Cyprinidae	X		X
Gobiidae		X	X
Morone unidentified			X
Searobin			X
Unidentified hake			X
Unidentifiable			X
Total	3	3	8

Table 4-3 Collections Of Atlantic Sturgeon During The 2014 Hudson River Surveys

<u>Date</u>	<u>Survey</u>	<u>Region</u>	<u>River Mile</u>	<u>Gear</u>	<u>Number Collected</u>	<u>Total Length (mm)</u>
5-Jun	LRS	West Point	55	1-m Epibenthic Sled	1	350
18-Jun	LRS	Poughkeepsie	64	1-m Epibenthic Sled	2	YOY
25-Jun	LRS	Poughkeepsie	71	1-m Epibenthic Sled	1	YOY
26-Jun	LRS	Cornwall	58	1-m Epibenthic Sled	1	YOY
1-Jul	FJS	Saugerties	106	3-m Beam Trawl	1	327
2-Jul	FJS	West Point	55	3-m Beam Trawl	1	608
2-Jul	FJS	Cornwall	59	3-m Beam Trawl	2	365,569
2-Jul	FJS	Poughkeepsie	65	3-m Beam Trawl	1	1320
3-Jul	FJS	Tappan Zee	31	3-m Beam Trawl	1	575
3-Jul	FJS	Indian Point	41	3-m Beam Trawl	2	548,585
16-Jul	FJS	Poughkeepsie	71	3-m Beam Trawl	2	123,347
17-Jul	FJS	West Point	55	3-m Beam Trawl	1	380
18-Jul	FJS	Tappan Zee	29	3-m Beam Trawl	1	673
		Croton-				
18-Jul	FJS	Haverstraw	37	3-m Beam Trawl	2	584,595
18-Jul	FJS	Indian Point	41	3-m Beam Trawl	2	388,398
29-Jul	FJS	Poughkeepsie	76	3-m Beam Trawl	1	130
29-Jul	FJS	Hyde Park	77	3-m Beam Trawl	1	126
30-Jul	FJS	Cornwall	58	3-m Beam Trawl	1	488
		Croton-				
31-Jul	FJS	Haverstraw	37	3-m Beam Trawl	1	647
31-Jul	FJS	West Point	48	3-m Beam Trawl	2	152,571
		Croton-				
6-Aug	LRS	Haverstraw	34	1-m Tucker Trawl	1	591
13-Aug	FJS	Hyde Park	80	3-m Beam Trawl	1	173
14-Aug	FJS	Battery	7	3-m Beam Trawl	2	563,674
14-Aug	FJS	West Point	54	3-m Beam Trawl	2	142,402
14-Aug	FJS	West Point	55	3-m Beam Trawl	4	214,400,140,157
14-Aug	FJS	Cornwall	59	3-m Beam Trawl	1	175
15-Aug	FJS	Indian Point	41	3-m Beam Trawl	1	612
28-Aug	FJS	West Point	54	3-m Beam Trawl	2	139,174
28-Aug	FJS	West Point	55	3-m Beam Trawl	2	159,211
		Croton-				
29-Aug	FJS	Haverstraw	36	3-m Beam Trawl	1	641
29-Aug	FJS	Indian Point	41	3-m Beam Trawl	1	578
4-Sep	LRS	West Point	55	1-m Epibenthic Sled	1	159
10-Sep	FJS	Poughkeepsie	65	3-m Beam Trawl	1	422
10-Sep	FJS	Poughkeepsie	67	3-m Beam Trawl	1	156
10-Sep	FJS	Poughkeepsie	68	3-m Beam Trawl	1	171
10-Sep	FJS	Poughkeepsie	71	3-m Beam Trawl	1	198
11-Sep	FJS	West Point	51	3-m Beam Trawl	2	790,547

Table 4-3 (Continued)

<u>Date</u>	<u>Survey</u>	<u>Region</u>	<u>River Mile</u>	<u>Gear</u>	<u>Number Collected</u>	<u>Total Length (mm)</u>
11-Sep	FJS	Cornwall	57	3-m Beam Trawl	1	218
11-Sep	FJS	Cornwall	58	3-m Beam Trawl	3	581,170,196
12-Sep	FJS	Indian Point	40	3-m Beam Trawl	1	600
24-Sep	FJS	Cornwall	58	3-m Beam Trawl	1	218
24-Sep	FJS	Poughkeepsie	64	3-m Beam Trawl	1	458
25-Sep	FJS	West Point	55	3-m Beam Trawl	2	177,232
9-Oct	FJS	Indian Point	44	3-m Beam Trawl	1	292
9-Oct	FJS	West Point	51	3-m Beam Trawl	1	232
9-Oct	FJS	West Point	54	3-m Beam Trawl	1	247
9-Oct	FJS	West Point	55	3-m Beam Trawl	3	241,229,247
21-Oct	FJS	Croton- Haverstraw	35	3-m Beam Trawl	1	605
22-Oct	FJS	West Point	55	3-m Beam Trawl	3	240,249,452
4-Nov	FJS	Tappan Zee	30	3-m Beam Trawl	1	720
5-Nov	FJS	Indian Point	39	3-m Beam Trawl	2	232,630
5-Nov	FJS	Indian Point	40	3-m Beam Trawl	1	612
5-Nov	FJS	Indian Point	43	3-m Beam Trawl	1	618
5-Nov	FJS	West Point	55	3-m Beam Trawl	1	249
5-Nov	FJS	Poughkeepsie	62	3-m Beam Trawl	2	311,485
18-Nov	FJS	Yonkers	20	3-m Beam Trawl	1	615
19-Nov	FJS	Indian Point	40	3-m Beam Trawl	2	441,595
20-Nov	FJS	West Point	55	3-m Beam Trawl	1	275
20-Nov	FJS	Poughkeepsie	71	3-m Beam Trawl	1	457

Table 4-4 Collections of Shortnose Sturgeon During the 2014 Hudson River Surveys

<u>Date</u>	<u>Survey</u>	<u>Region</u>	<u>River Mile</u>	<u>Gear</u>	<u>Number Collected</u>	<u>Total Length (mm)</u>
8-May	LRS	Saugerties	104	1-m Epibenthic Sled	1	798
20-May	LRS	Albany	138	1-m Tucker Trawl	1	PYSL
4-Jun	LRS	Kingston	93	1-m Epibenthic Sled	1	PYSL
12-Jun	LRS	Kingston	92	1-m Epibenthic Sled	1	YOY
2-Jul	FJS	Yonkers	16	3-m Beam Trawl	2	845,1020
16-Jul	FJS	Kingston	92	3-m Beam Trawl	2	556,677
17-Jul	FJS	Yonkers	22	3-m Beam Trawl	2	763,970
24-Jul	LRS	Yonkers	16	1-m Epibenthic Sled	1	879
29-Jul	FJS	Hyde Park	81	3-m Beam Trawl	2	710,708
29-Jul	FJS	Kingston	92	3-m Beam Trawl	1	718
30-Jul	FJS	Yonkers	16	3-m Beam Trawl	1	905
13-Aug	FJS	Poughkeepsie	70	3-m Beam Trawl	1	141
13-Aug	FJS	Hyde Park	80	3-m Beam Trawl	1	150
13-Aug	FJS	Kingston	89	3-m Beam Trawl	1	639
15-Aug	FJS	Tappan Zee	30	3-m Beam Trawl	1	564
15-Aug	FJS	Croton-Haverstraw	37	3-m Beam Trawl	1	783
15-Aug	FJS	Indian Point	39	3-m Beam Trawl	1	674
27-Aug	FJS	Hyde Park	80	3-m Beam Trawl	1	192
10-Sep	FJS	Kingston	89	3-m Beam Trawl	1	210
25-Sep	FJS	Indian Point	41	3-m Beam Trawl	2	695,937
29-Sep	LRS	Yonkers	14	1-m Epibenthic Sled	1	900

Table 4-5 Collections of Unidentified Sturgeon During the 2014 Hudson River Surveys

<u>Date</u>	<u>Survey</u>	<u>Region</u>	<u>River Mile</u>	<u>Gear</u>	<u>Number Collected</u>	<u>Total Length (mm)</u>
1-Jul	FJS	Kingston	93	3-m Beam Trawl	1	75
17-Jul	FJS	Cornwall	58	3-m Beam Trawl	1	120
18-Jul	FJS	Indian Point	44	3-m Beam Trawl	1	94
27-Aug	FJS	Poughkeepsie	63	3-m Beam Trawl	1	139