Summary of Far-Field Sturgeon Monitoring for the New NY Bridge at Tappan Zee (2013)

Annual Report

Prepared by

Justin Krebs, Ph.D.

and

Fred Jacobs, Ph.D.

AKRF, Inc.

7250 Parkway Drive, Suite 210

Hanover, MD 21076

for

New York State Thruway Authority

and

New York State Department of Environmental Conservation

February 8, 2014

1.0 INTRODUCTION

As required by the Net Conservation Benefit section (condition F. i.) of the New York State Department of Environmental Conservation (DEC) permit 3-9903-00043/00014 for the New NY Bridge, large-scale directional movement of acoustic-tagged sturgeon was monitored using acoustic receivers deployed in the Hudson River between the George Washington Bridge at river mile (RM) 12 and Stony Point (RM 40). These "far-field" receivers were used to identify acoustic-tagged subadult and adult Atlantic sturgeon as they entered the lower Hudson River, but prior to their arrival in the "near-field" acoustic array deployed within the bridge construction zone. Receivers were then used to track these fish as they migrated upstream of the construction site through Haverstraw Bay. Far-field monitoring was also used to provide information on the movement of resident tagged sturgeon (i.e., shortnose sturgeon and pre-migrant juvenile Atlantic sturgeon) in this part of the Hudson River.

Far-field sturgeon monitoring was used to detect tagged sturgeon as they moved from gateway to gateway but not to determine fine-scale movement or localized habitat use. The latter will be accomplished using mobile tracking of Thruway-tagged sturgeon within the same 50-km river reach and the near-field acoustic array deployed within the bridge construction zone. Because the intended use of the far-field receivers is limited to large-scale, directional movements, the potential for tag interference caused by code collision is not likely to be an issue. Therefore, VEMCO brand acoustic receivers were used for far-field monitoring. Using VEMCO receivers has allowed the detection of sturgeon (and other fish species) tagged by a number of researchers in the northeastern U.S., including sturgeon tagged by DEC with LOTEK dual-mode transmitters.

1.1 FAR-FIELD MONITORING ARRAY

Far-field sturgeon monitoring was accomplished through the use of stationary gateways located along an approximately 50-km (31 mile) stretch of the Hudson River between the George Washington Bridge (RM 12) and Stony Point (RM 40; Figure 1). From the George Washington Bridge (RM 12) to Piermont Marsh (RM 25), gateways consisted of one centrally located receiver deployed every 5 km. Upstream of the construction array (RM 27) where the river widens, three equally spaced receivers were deployed across the river every 5 km from Hook Mountain (RM 30) to Stony Point (RM 40). Eleven receivers were deployed by Environmental Research and Consulting, Inc. (ERC) for the Thruway Authority on June 4, 2013 prior to the 90-day deadline (June 23) required by the DEC permit. Six additional VEMCO receivers located within the far-field array are maintained by State University of New York at Stony Brook (SUNY) and Delaware State University (DESU) in cooperation with DEC. It is anticipated that monitoring data collected by non-Thruway receivers could be used to complete the far-field monitoring array as data become available. These data will

be incorporated into the analysis for the 2013 far-field monitoring year when they are received.

Range testing for several of the Thruway's far-field receivers took place on June 6, 2013 to ensure adequate coverage of the entire river width at each gateway. The results of the range testing are summarized in a memorandum to the Thruway Authority and DEC dated August 20, 2013 (AKRF 2013) and indicated that the receivers deployed would provide adequate spatial coverage.

Following the June 4 deployment of the far-field receivers, data downloads occurred approximately every 60 days on June 18, August 12, and October 28. Far-field receivers were retrieved on October 28, 2013 following the most recent data download and will be redeployed in the spring when river conditions allow (most likely early April).

For the purposes of the data summary presented herein, the study area extends from the gateway at Yonkers upstream to the gateway at Grassy Point. This summary includes an account of sturgeon presence, which is defined as the number and identity of unique tagged fish detected in the far-field study area during the 2013 monitoring year, as well as the total number of tag detections for all acoustic-tagged sturgeon. In addition, a general overview of residency and movement by tagged sturgeon is given. Residency is defined here as the amount of time spent by individual sturgeon within the far-field study area or within a specific region of the study area.

This overview of sturgeon presence, residence time, and movement through the far-field array includes sturgeon tagged by DEC, SUNY, and ERC, which were the majority of acoustic-tagged sturgeon detected during far-field monitoring. The data presented here are representative of the sturgeon species (shortnose and Atlantic) and life stages (juvenile, sub-adult, adult) detected during monitoring and include 88% of unique tag codes detected and 97% of the total detections recorded during monitoring. Additional analysis of far-field monitoring data may be performed following discussions with DEC.

2.0 RESULTS

During the 21-week monitoring period from June 4 to October 28, more than 350,000 tag detections were recorded for [redacted] unique, acoustic-tagged fish. Prior to analysis, [redacted] single-detections of unique tag codes were removed as spurious, leaving [redacted] unique tag codes. Of those, [redacted] were confirmed to be sturgeon tagged by researchers from seven organizations and 2 were confirmed to be blueback herring tagged by DEC. Species identification is being determined for the remaining [redacted] tag codes, but based on tag sequences for known sturgeon, it is likely that many of these are also sturgeon.

2.1 STURGEON PRESENCE

Of the [redacted] tagged sturgeon present in the far-field study area during the 2013 monitoring period, [redacted] were tagged by DEC, SUNY, and ERC. These included [redacted] Atlantic sturgeon and 26 shortnose sturgeon (Table 1). The majority of these ([redacted]) were sub-adult or adult Atlantic sturgeon originating from the coastal waters of the Mid-Atlantic Bight. The remainder (39) were juvenile and adult shortnose sturgeon, which are primarily resident to the Hudson River, or juvenile Atlantic sturgeon that had likely not yet emigrated from the river.

Of the [redacted] tagged sturgeon that have been confirmed, there were:

[redacted] sub-adult Atlantic sturgeon tagged by SUNY;

13 juvenile Atlantic sturgeon tagged by DEC;

1 sub-adult or adult Atlantic sturgeon tagged by Hal Brundage at ERC;

26 shortnose sturgeon (juvenile and adult) tagged by DEC.

2.2 RESIDENCE TIME

Of the 292,587 total tag detections recorded from known Atlantic and shortnose sturgeon, approximately one-third (34%) were from six shortnose sturgeon that spent the majority of the monitoring period (18-21 weeks) within the far-field study area (Table 2). The number of detections for these individuals ranged from 11,450 to 21,312. The 39 DEC-tagged juvenile Atlantic and shortnose sturgeon detected during far-field monitoring represented nearly 60% (>178,000) of the total tag detections during 2013. The remaining tag detections were from [redacted] sub-adult and adult Atlantic sturgeon.

In general, shortnose sturgeon were detected more frequently in Haverstraw Bay between the Croton Point and Grassy Point gateways (Table 3). In contrast, Atlantic sturgeon were not resident to any particular region of the study area.

2.2.1 Shortnose sturgeon

Residence time for DEC-tagged shortnose sturgeon within the far-field study area ranged from less than one day to the entire duration of the 21-week monitoring period. Residency for this species can be summarized as follows:

- 10 of 26 shortnose sturgeon (38%) spent more than half of the monitoring period within the study area; 9 of these 10 shortnose sturgeon were detected over 18 of 21 weeks of monitoring; 4 of these shortnose sturgeon were still present at the time of the last observation in late October
- 6 of 26 shortnose sturgeon (23%) spent relatively little time in the study area (fewer than 4 weeks)

- The majority of tag detections for shortnose sturgeon (58% on average) occurred upstream of Croton Point in Haverstraw Bay, suggesting that shortnose sturgeon spent most of their time in this area. By contrast, very few detections of shortnose sturgeon occurred in the lower region of the far-field study area between the Yonkers and Hastings gateways (5% on average)

2.2.2 Juvenile Atlantic sturgeon

Residence time for DEC-tagged juvenile Atlantic sturgeon in the far-field study area ranged from just a few days to nearly the entire monitoring period. Residency for juvenile Atlantic sturgeon was as follows:

- 5 of 13 juvenile Atlantic sturgeon (38%) spent more than half of the monitoring period within the study area; 4 of these 13 Atlantic sturgeon were detected over 18 of 21 weeks of monitoring; 1 of these Atlantic sturgeon was detected throughout the 21-week monitoring period and was still in the study area at the time of the last observation in late October
- 3 of 13 juvenile Atlantic sturgeon (23%) spent relatively little time (fewer than 4 weeks) in the study area
- Unlike shortnose sturgeon, juvenile Atlantic sturgeon were not concentrated in a particular region of the far-field study area. Juveniles were most commonly detected in the region between Haverstraw Bay and the Tappan Zee Bridge (40%), but were only slightly less common upstream in Haverstraw Bay (30%) and the region south of the Tappan Zee Bridge between Yonkers and Hastings (30%).

2.2.3 Sub-adult/adult Atlantic sturgeon

Residence time for sub-adult and adult Atlantic sturgeon ranged from [redacted]. Residency for sub-adult and adult Atlantic sturgeon in the far-field study area was as follows:

- [redacted] sub-adult/adult Atlantic sturgeon ([redacted]) spent more than half of the monitoring period within the study area; [redacted] Atlantic sturgeon were detected over [redacted] weeks of monitoring; [redacted] of these Atlantic sturgeon was detected throughout the 21-week monitoring period and was still in the study area at the time of the last observation in late October
- [redacted] sub-adult/adult Atlantic sturgeon ([redacted]) spent relatively little time (fewer than 4 weeks) in the study area; [redacted] Atlantic sturgeon detected during the monitoring period ([redacted]) spent less than a week in the study area; most of these sturgeon were detected over a [redacted] period [redacted]

- [redacted] sub-adult/adult Atlantic sturgeon ([redacted]) were present during June when monitoring began and [redacted] Atlantic sturgeon ([redacted]) were not detected beyond the end of September, suggesting that they had left the Hudson River
- [redacted] On average, [redacted] of detections occurred downstream of the Tappan Zee Bridge, [redacted] of detections occurred upstream between Sleepy Hollow and Ossining, and [redacted] of detections occurred even further upstream in Haverstraw Bay

2.3 MOVEMENT

Telemetry data for the [redacted] tagged sturgeon detected during the 21-week monitoring period indicated several different types of movement patterns by sturgeon. Some sturgeon exhibited localized movement within a relatively small area of the 50-km far-field study area (i.e., in the vicinity of a specific gateway; see example in Figure 2), while other sturgeon exhibited movement over a larger area throughout the far-field (see example in Figure 3). Some sturgeon were observed to move within the far-field study area for several weeks before moving upstream of the array where they remained for several weeks before moving back into the far-field and finally exiting the downstream end of the monitoring area (see example in Figure 4). A fourth group of sturgeon exhibited "saltatory" movement characterized by rapid transit of the far-field study area from downstream to upstream or vice-versa over several hours (see examples in Figures 5 and 6). Some sturgeon were observed to move upstream through the study area and then back downstream after an extended residence upstream of Haverstraw Bay, often for several months. These sturgeon were typically not detected again after exiting the study area [redacted].

2.3.1 Additional analysis of sturgeon movement

Additional interpretative analysis by species and life stage (e.g., subadult and adult Atlantic sturgeon) could be performed at the request of the DEC, but would require additional information from each of the researchers, including:

- Species identification
- Date tagged
- Geographic location when tagged
- Body size when tagged

This analysis would include an assessment of whether or not adult Atlantic sturgeon were able to move upstream and downstream through the construction area during the spawning

migration. Assessment of sturgeon presence and movement during dredging and pile driving activities will be performed as part of the reporting for the near-field sturgeon monitoring.

3.0 REFERENCES

AKRF, Inc. 2013. Results of Range Testing and Estimation of Sturgeon Detection Rates for Far-Field Stationary Gateways Deployed for the New NY Bridge at Tappan Zee. Final report submitted to the New York State Thruway Authority and New York State Department of Environmental Conservation. August 20, 2013. 13 pp.

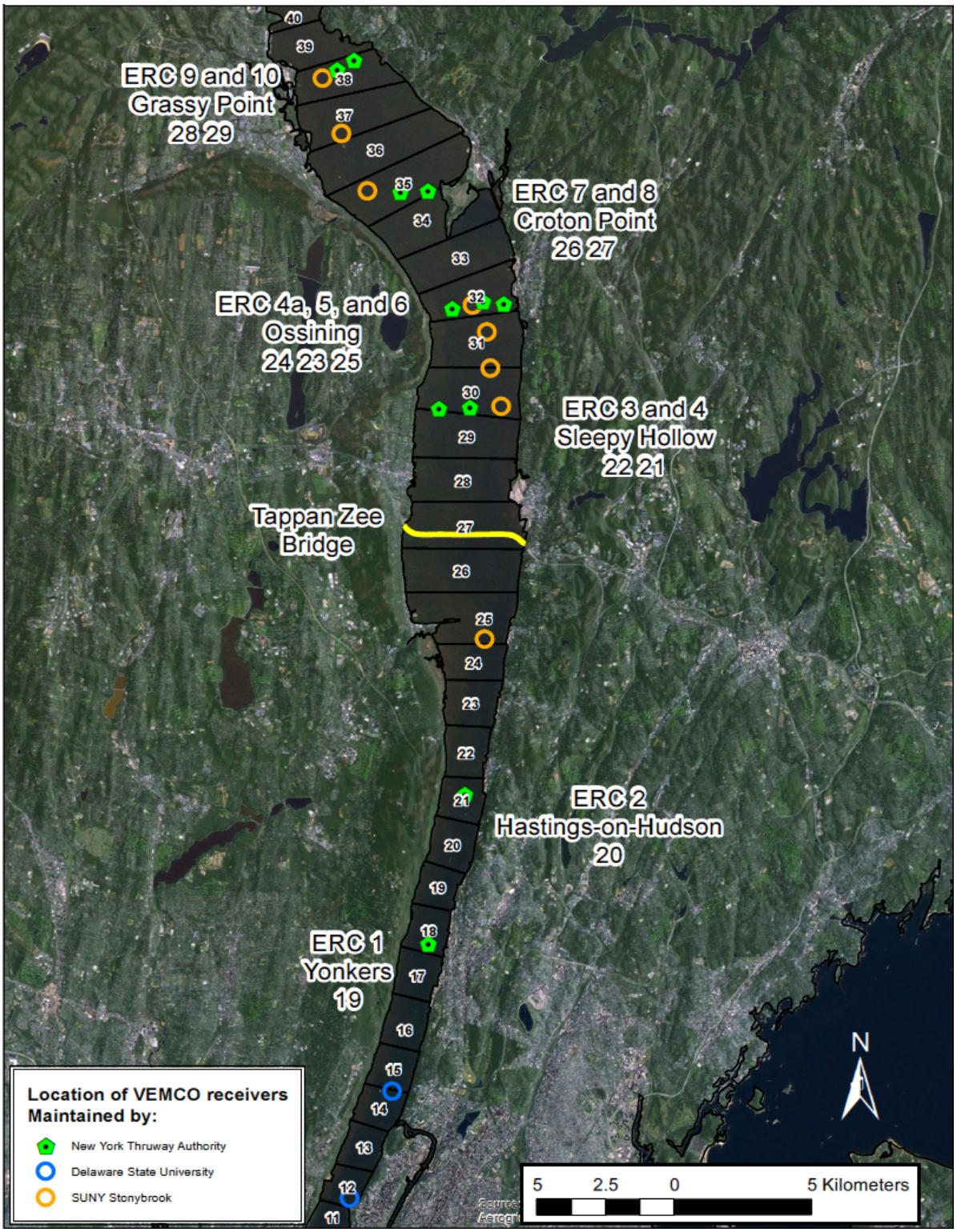

Figure 1 – Location of stationary far-field receiver gateways.

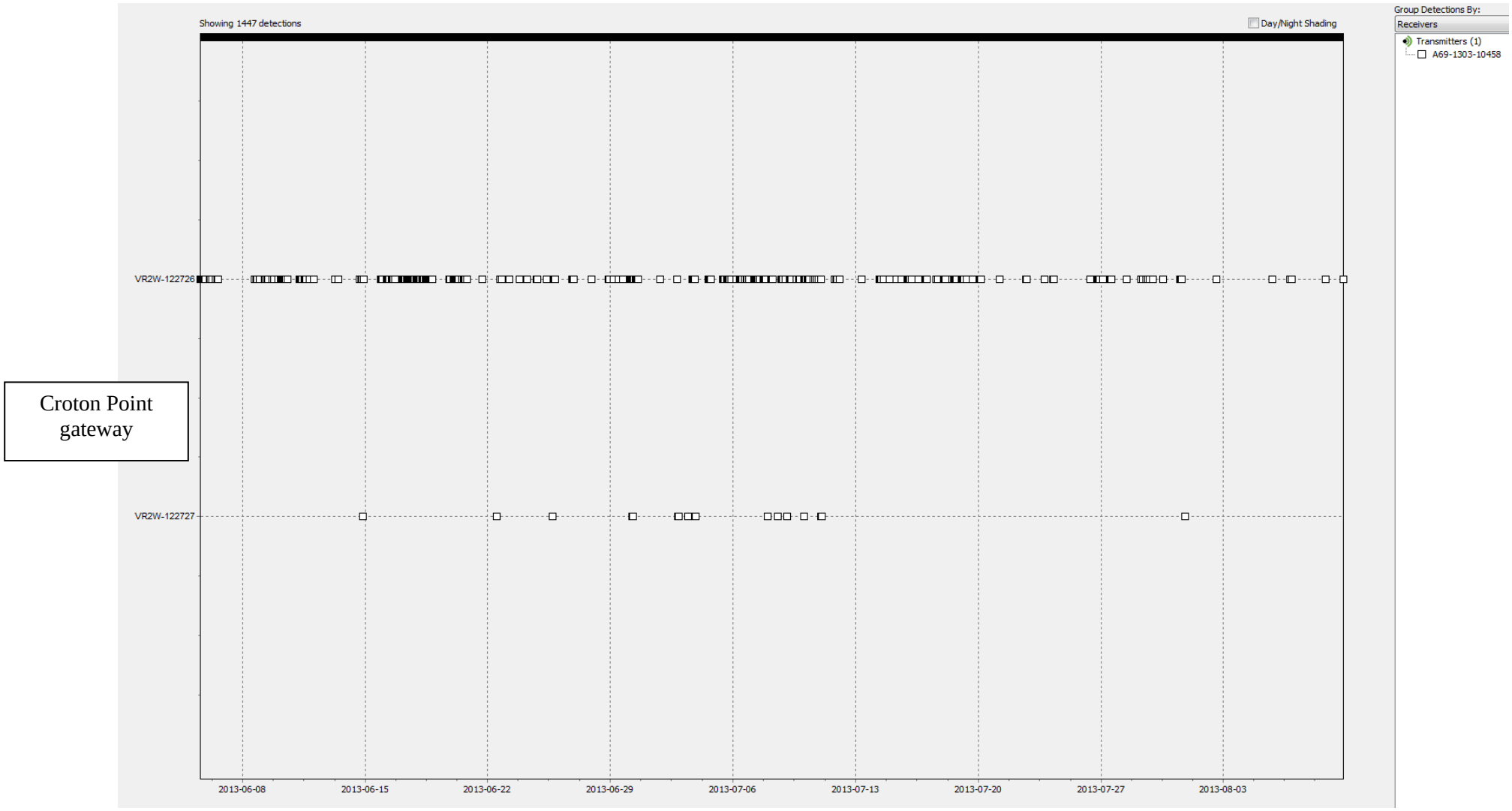

Figure 2 - Detections of an acoustic-tagged juvenile Atlantic sturgeon at the Croton Point gateway indicating localized movement in the vicinity of the Croton Point gateway between June 5 and August 9, 2013.

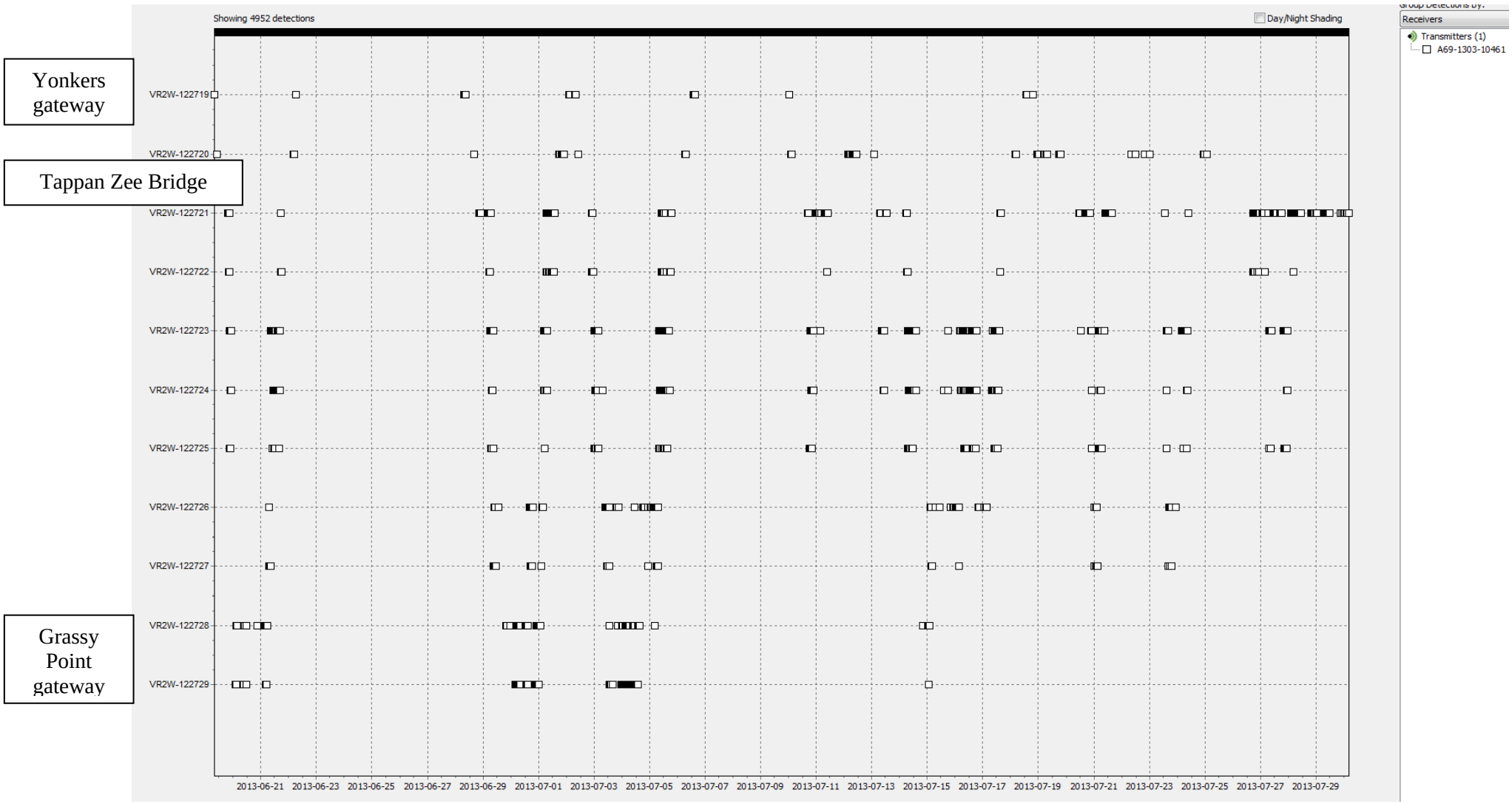

Figure 3 - Detections of an acoustic-tagged shortnose sturgeon indicating directional movement between the Yonkers gateway at the southernmost end of the far-field study area and the Grassy Point gateway at the northernmost end of the study area. This sturgeon transited the study area approximately 16 times between June 19 and July 30, 2013.

[redacted]

Figure 4 - Detections of an acoustic-tagged Atlantic sturgeon indicating directional movement [redacted]

[redacted]

Figure 5 - Detections of an acoustic-tagged Atlantic sturgeon indicating “saltatory” directional movement [redacted]

[redacted]

Figure 6 - Detections of an acoustic-tagged Atlantic sturgeon indicating “saltatory” directional movement [redacted]

Table 1. Sturgeon presence in the far-field monitoring array from June through October 2013.

Tag code	Species	Life stage	Tagged by	Number of detections
A69-1303-10473	Atlantic Sturgeon	Juv	DEC	6,608
A69-1303-10471	Atlantic Sturgeon	Juv	DEC	6,412
A69-1303-10472	Atlantic Sturgeon	Juv	DEC	3,842
A69-1303-10468	Atlantic Sturgeon	Juv	DEC	3,163
A69-1303-10467	Atlantic Sturgeon	Juv	DEC	3,033
A69-1303-10476	Atlantic Sturgeon	Juv	DEC	1,718
A69-1303-10458	Atlantic Sturgeon	Juv	DEC	1,447
A69-1303-10451	Atlantic Sturgeon	Juv	DEC	1,292
A69-1303-10470	Atlantic Sturgeon	Juv	DEC	1,134
A69-1303-10474	Atlantic Sturgeon	Juv	DEC	558
A69-1303-10448	Atlantic Sturgeon	Juv	DEC	470
A69-1303-10463	Atlantic Sturgeon	Juv	DEC	385
A69-1303-10453	Atlantic Sturgeon	Juv	DEC	345
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A69-1303-61436	Atlantic Sturgeon	Sub/Adult	ERC	2,248
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Table 1. Sturgeon presence in the far-field monitoring array from June through October 2013.

Tag code	Species	Life stage	Tagged by	Number of detections
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Table 1. Sturgeon presence in the far-field monitoring array from June through October 2013.

Tag code	Species	Life stage	Tagged by	Number of detections
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A69-1303-10780	Shortnose Sturgeon	Juv/Adult	DEC	21,312
A69-1303-10793	Shortnose Sturgeon	Juv/Adult	DEC	19,068
A69-1303-10801	Shortnose Sturgeon	Juv/Adult	DEC	17,943
A69-1303-10774	Shortnose Sturgeon	Juv/Adult	DEC	15,647
A69-1303-10773	Shortnose Sturgeon	Juv/Adult	DEC	13,803
A69-1303-10787	Shortnose Sturgeon	Juv/Adult	DEC	11,450
A69-1303-10447	Shortnose Sturgeon	Juv/Adult	DEC	7,565
A69-1303-10465	Shortnose Sturgeon	Juv/Adult	DEC	7,440
A69-1303-10461	Shortnose Sturgeon	Juv/Adult	DEC	4,952
A69-1303-10810	Shortnose Sturgeon	Juv/Adult	DEC	3,667
A69-1303-10455	Shortnose Sturgeon	Juv/Adult	DEC	3,550
A69-1303-10807	Shortnose Sturgeon	Juv/Adult	DEC	3,086
A69-1303-10789	Shortnose Sturgeon	Juv/Adult	DEC	3,010
A69-1303-10459	Shortnose Sturgeon	Juv/Adult	DEC	2,657
A69-1303-10795	Shortnose Sturgeon	Juv/Adult	DEC	2,227
A69-1303-10805	Shortnose Sturgeon	Juv/Adult	DEC	2,075
A69-1303-10456	Shortnose Sturgeon	Juv/Adult	DEC	1,899
A69-1303-10802	Shortnose Sturgeon	Juv/Adult	DEC	1,755
A69-1303-10784	Shortnose Sturgeon	Juv/Adult	DEC	1,733
A69-1303-10475	Shortnose Sturgeon	Juv/Adult	DEC	1,291
A69-1303-10464	Shortnose Sturgeon	Juv/Adult	DEC	804
A69-1303-10469	Shortnose Sturgeon	Juv/Adult	DEC	676
A69-1303-10794	Shortnose Sturgeon	Juv/Adult	DEC	395
A69-1303-10779	Shortnose Sturgeon	Juv/Adult	DEC	282
A69-1303-10809	Shortnose Sturgeon	Juv/Adult	DEC	120
A69-1303-10457	Shortnose Sturgeon	Juv/Adult	DEC	2
A69-1601-8089	Blueback Herring		DEC	27
A69-1601-8080	Blueback Herring		DEC	19

Table 2. Residence time of tagged sturgeon detected in the far-field monitoring array from June through October 2013.

Tag code	Species	Life stage	Tagged by	Number of detections	Arrival	Departure	Residence Time Days	Residence Time Weeks
A69-1303-10474	Atlantic Sturgeon	Juv	DEC	558	6-Jun-13	28-Oct-13	144	21
A69-1303-10473	Atlantic Sturgeon	Juv	DEC	6,608	4-Jun-13	25-Oct-13	143	20
A69-1303-10471	Atlantic Sturgeon	Juv	DEC	6,412	8-Jun-13	23-Oct-13	137	20
A69-1303-10467	Atlantic Sturgeon	Juv	DEC	3,033	19-Jun-13	29-Oct-13	132	19
A69-1303-10472	Atlantic Sturgeon	Juv	DEC	3,842	11-Jul-13	17-Oct-13	98	14
A69-1303-10470	Atlantic Sturgeon	Juv	DEC	1,134	15-Jul-13	24-Sep-13	71	10
A69-1303-10458	Atlantic Sturgeon	Juv	DEC	1,447	5-Jun-13	9-Aug-13	65	9
A69-1303-10463	Atlantic Sturgeon	Juv	DEC	385	5-Jun-13	19-Jul-13	44	6
A69-1303-10476	Atlantic Sturgeon	Juv	DEC	1,718	23-Sep-13	26-Oct-13	33	5
A69-1303-10468	Atlantic Sturgeon	Juv	DEC	3,163	28-Jun-13	27-Jul-13	29	4
A69-1303-10451	Atlantic Sturgeon	Juv	DEC	1,292	6-Jun-13	22-Jun-13	16	2
A69-1303-10448	Atlantic Sturgeon	Juv	DEC	470	6-Jun-13	11-Jun-13	5	1
A69-1303-10453	Atlantic Sturgeon	Juv	DEC	345	2-Jul-13	4-Jul-13	2	0
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A69-1303-61436	Atlantic Sturgeon	Sub/Adult	ERC	2,248	5-Jun-13	13-Sep-13	100	14
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Table 2. Residence time of tagged sturgeon detected in the far-field monitoring array from June through October 2013.

							Residence Time	
Tag code	Species	Life stage	Tagged by	Number of detections	Arrival	Departure	Days	Weeks
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Table 2. Residence time of tagged sturgeon detected in the far-field monitoring array from June through October 2013.

Tag code	Species	Life stage	Tagged by	Number of detections	Arrival	Departure	Residence Time Days	Residence Time Weeks
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A69-1303-10773	Shortnose Sturgeon	Juv/Adult	DEC	13,803	4-Jun-13	28-Oct-13	146	21
A69-1303-10787	Shortnose Sturgeon	Juv/Adult	DEC	11,450	4-Jun-13	27-Oct-13	145	21
A69-1303-10801	Shortnose Sturgeon	Juv/Adult	DEC	17,943	5-Jun-13	28-Oct-13	145	21
A69-1303-10475	Shortnose Sturgeon	Juv/Adult	DEC	1,291	6-Jun-13	29-Oct-13	145	21
A69-1303-10774	Shortnose Sturgeon	Juv/Adult	DEC	15,647	5-Jun-13	25-Oct-13	142	20
A69-1303-10780	Shortnose Sturgeon	Juv/Adult	DEC	21,312	10-Jun-13	28-Oct-13	140	20
A69-1303-10805	Shortnose Sturgeon	Juv/Adult	DEC	2,075	17-Jun-13	27-Oct-13	132	19
A69-1303-10793	Shortnose Sturgeon	Juv/Adult	DEC	19,068	10-Jun-13	17-Oct-13	129	18
A69-1303-10802	Shortnose Sturgeon	Juv/Adult	DEC	1,755	23-Jun-13	25-Oct-13	124	18
A69-1303-10810	Shortnose Sturgeon	Juv/Adult	DEC	3,667	6-Jun-13	15-Sep-13	101	14
A69-1303-10795	Shortnose Sturgeon	Juv/Adult	DEC	2,227	23-Aug-13	28-Oct-13	66	9
A69-1303-10465	Shortnose Sturgeon	Juv/Adult	DEC	7,440	5-Jun-13	2-Aug-13	58	8
A69-1303-10447	Shortnose Sturgeon	Juv/Adult	DEC	7,565	10-Jun-13	3-Aug-13	54	8
A69-1303-10459	Shortnose Sturgeon	Juv/Adult	DEC	2,657	9-Jun-13	31-Jul-13	52	7
A69-1303-10461	Shortnose Sturgeon	Juv/Adult	DEC	4,952	19-Jun-13	30-Jul-13	41	6
A69-1303-10784	Shortnose Sturgeon	Juv/Adult	DEC	1,733	16-Sep-13	27-Oct-13	41	6
A69-1303-10789	Shortnose Sturgeon	Juv/Adult	DEC	3,010	5-Jun-13	14-Jul-13	39	6
A69-1303-10455	Shortnose Sturgeon	Juv/Adult	DEC	3,550	4-Jun-13	11-Jul-13	37	5
A69-1303-10464	Shortnose Sturgeon	Juv/Adult	DEC	804	22-Jun-13	24-Jul-13	32	5
A69-1303-10807	Shortnose Sturgeon	Juv/Adult	DEC	3,086	8-Jun-13	8-Jul-13	30	4
A69-1303-10456	Shortnose Sturgeon	Juv/Adult	DEC	1,899	11-Jun-13	1-Jul-13	20	3
A69-1303-10809	Shortnose Sturgeon	Juv/Adult	DEC	120	16-Sep-13	22-Sep-13	6	1
A69-1303-10469	Shortnose Sturgeon	Juv/Adult	DEC	676	20-Jun-13	24-Jun-13	4	1
A69-1303-10779	Shortnose Sturgeon	Juv/Adult	DEC	282	4-Jun-13	7-Jun-13	3	0
A69-1303-10794	Shortnose Sturgeon	Juv/Adult	DEC	395	16-Sep-13	18-Sep-13	2	0
A69-1303-10457	Shortnose Sturgeon	Juv/Adult	DEC	2	8-Jul-13	8-Jul-13	0	0

Table 3. Percentage of sturgeon detections at each gateway in the far-field monitoring array from June through October 2013. Gateways are arranged in order from downstream (Yonkers) to upstream (Grassy Point).

Tag code	Species	Life stage	Tagged by	Number of detections	Gateway					
					Yonkers	Hastings	Sleepy Hollow	Ossining	Croton Point	Grassy Point
A69-1303-10468	Atlantic Sturgeon	Juv	DEC	3,163	58	35	1	2	0	3
A69-1303-10453	Atlantic Sturgeon	Juv	DEC	345	47	53	0	0	0	0
A69-1303-10451	Atlantic Sturgeon	Juv	DEC	1,292	37	23	8	16	16	0
A69-1303-10470	Atlantic Sturgeon	Juv	DEC	1,134	12	39	3	38	1	7
A69-1303-10467	Atlantic Sturgeon	Juv	DEC	3,033	11	31	20	22	8	8
A69-1303-10448	Atlantic Sturgeon	Juv	DEC	470	4	10	4	26	13	43
A69-1303-10472	Atlantic Sturgeon	Juv	DEC	3,842	3	17	2	13	55	10
A69-1303-10476	Atlantic Sturgeon	Juv	DEC	1,718	1	5	3	57	23	11
A69-1303-10471	Atlantic Sturgeon	Juv	DEC	6,412	0	0	13	66	14	6
A69-1303-10473	Atlantic Sturgeon	Juv	DEC	6,608	0	0	7	30	32	31
A69-1303-10474	Atlantic Sturgeon	Juv	DEC	558	0	0	1	87	5	7
A69-1303-10458	Atlantic Sturgeon	Juv	DEC	1,447	0	0	0	0	100	0
A69-1303-10463	Atlantic Sturgeon	Juv	DEC	385	0	0	0	100	0	0
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Table 3. Percentage of sturgeon detections at each gateway in the far-field monitoring array from June through October 2013. Gateways are arranged in order from downstream (Yonkers) to upstream (Grassy Point).

					Gateway					
Tag code	**Species**	**Life stage**	**Tagged by**	**Number of detections**	**Yonkers**	**Hastings**	**Sleepy Hollow**	**Ossining**	**Croton Point**	**Grassy Point**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A69-1303-61436	Atlantic Sturgeon	Sub/Adult	ERC	2,248	6	6	14	38	20	16
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
A69-1303-10795	Shortnose Sturgeon	Juv/Adult	DEC	2,227	32	7	3	20	21	16

Table 3. Percentage of sturgeon detections at each gateway in the far-field monitoring array from June through October 2013. Gateways are arranged in order from downstream (Yonkers) to upstream (Grassy Point).

Tag code	Species	Life stage	Tagged by	Number of detections	Gateway					
					Yonkers	Hastings	Sleepy Hollow	Ossining	Croton Point	Grassy Point
A69-1303-10810	Shortnose Sturgeon	Juv/Adult	DEC	3,667	8	22	39	25	0	5
A69-1303-10475	Shortnose Sturgeon	Juv/Adult	DEC	1,291	8	4	9	49	6	24
A69-1303-10774	Shortnose Sturgeon	Juv/Adult	DEC	15,647	3	10	23	37	11	16
A69-1303-10461	Shortnose Sturgeon	Juv/Adult	DEC	4,952	2	7	23	43	9	16
A69-1303-10805	Shortnose Sturgeon	Juv/Adult	DEC	2,075	2	6	6	16	7	64
A69-1303-10465	Shortnose Sturgeon	Juv/Adult	DEC	7,440	2	2	38	51	6	2
A69-1303-10787	Shortnose Sturgeon	Juv/Adult	DEC	11,450	2	2	3	75	9	10
A69-1303-10459	Shortnose Sturgeon	Juv/Adult	DEC	2,657	1	3	5	20	11	61
A69-1303-10447	Shortnose Sturgeon	Juv/Adult	DEC	7,565	1	2	12	39	18	29
A69-1303-10456	Shortnose Sturgeon	Juv/Adult	DEC	1,899	1	0	3	10	13	73
A69-1303-10780	Shortnose Sturgeon	Juv/Adult	DEC	21,312	0	2	2	31	20	45
A69-1303-10793	Shortnose Sturgeon	Juv/Adult	DEC	19,068	0	1	25	64	9	1
A69-1303-10801	Shortnose Sturgeon	Juv/Adult	DEC	17,943	0	1	22	44	14	20
A69-1303-10455	Shortnose Sturgeon	Juv/Adult	DEC	3,550	0	1	6	35	21	36
A69-1303-10773	Shortnose Sturgeon	Juv/Adult	DEC	13,803	0	0	15	44	23	18
A69-1303-10469	Shortnose Sturgeon	Juv/Adult	DEC	676	0	0	8	24	14	55
A69-1303-10802	Shortnose Sturgeon	Juv/Adult	DEC	1,755	0	0	5	25	23	46
A69-1303-10789	Shortnose Sturgeon	Juv/Adult	DEC	3,010	0	0	3	6	36	56
A69-1303-10807	Shortnose Sturgeon	Juv/Adult	DEC	3,086	0	0	2	29	27	42
A69-1303-10457	Shortnose Sturgeon	Juv/Adult	DEC	2	0	0	0	0	100	0
A69-1303-10464	Shortnose Sturgeon	Juv/Adult	DEC	804	0	0	0	21	11	68
A69-1303-10779	Shortnose Sturgeon	Juv/Adult	DEC	282	0	0	0	0	0	100
A69-1303-10784	Shortnose Sturgeon	Juv/Adult	DEC	1,733	0	0	0	9	52	38
A69-1303-10794	Shortnose Sturgeon	Juv/Adult	DEC	395	0	0	0	0	86	14
A69-1303-10809	Shortnose Sturgeon	Juv/Adult	DEC	120	0	0	0	0	18	83