

Supplementary Table 1

Overview of deployed acoustic tags (InnovaSea, 69.0 kHz, 120-s duty cycle), including tag models V7, V9, V13, V16, deployed in Atlantic sturgeon (*Acipenser oxyrinchus*) caught from 2014 through 2021 in eastern Long Island Sound and the Connecticut River. Also provided are the size ranges of tagged Atlantic sturgeon and their split into the subadult and adult categories, operationally defined by total length as 50–130 cm and >130 cm, respectively.

Year	V7	V9	V13	V16	No. deployed	TL range (cm)	No. of subadults	No. of adults
2014		4		8	12	55.5–174.0	9	3
2015					0			
2016	1	1			2	58.5–62.0	2	
2017					0			
2018			4		4	57.8–112.0	4	
2019		2	8	15	25	77.6–149.0	21	4
2020	5	6	21	9	41	52.5–164.5	32	9
2021		1	8	21	30	73.8–162.0	21	9

Supplementary Table 2

Summary of detections of Atlantic sturgeon (*Acipenser oxyrinchus*) (ATS) in the study area, in eastern Long Island Sound (LIS) and the Connecticut River (CTR), during 2019–2021 for fish tagged not by the Connecticut Department of Energy and Environmental Protection but by other agencies and institutions. Tagging organizations included the Delaware Division of Fish and Wildlife (DEDFW), Delaware State University (DESU), Smithsonian Ecological Research Center (SERC), Maryland Department of Natural Resources (MDDNR), Stony Brook University (SBU), Virginia Commonwealth University (VCU), and Virginia Institute of Marine Science (VIMS). DPS=distinct population segment; rkm=river kilometer.

DPS	Institution	LIS + CTR		Upper CTR		
		Detections	ATS	Detections	ATS	Max rkm
New York Bight	SBU	248,378	63	4352	4	47
	SBU	15,572	4			
Chesapeake	VIMS	54,091	15	730	2	47
	SERC	5051	14			
	DESU	751	7			
	VCU	517	7			
	DEDFW	264	2			
	MDDNR	76	1			
	U.S. Navy	64	1			

Supplementary Table 3

Summary of the number of tagged Atlantic sturgeon (*Acipenser oxyrinchus*) that were detected in the upper section of the Connecticut River (river kilometer [rkm] 21–52, gray shading) and the number of fish detected at the putative spawning area near Portland, Connecticut (rkm 47, no shading), during each year from 2019 through 2021.

	2019	2020	2021
# Fish detected	30	61	71
# Upper river fish	16	42	32
% Fish detected	53.3	68.9	45.1
Avg. upper river days detected	11.8	23.5	18.0
# Portland fish	10	17	7
% Fish detected	33.3	27.9	9.9
% Upper river fish	62.5	40.5	21.9
Avg. days detected	2.1	11.7	1.0
Avg. day of first detection	Aug. 12	Aug. 20	Aug. 23