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RH/S Update 2021

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While no decision is pending regarding River Herring/Shad (RH/S), an update of the Progress and Cap Review is scheduled for 2021. This document can be used when the 2023-2024 RH/S caps are considered in 2022 as part of the second mackerel rebuilding action.[1] Minor additional updates may be made if data become available.

In 2014, the Council approved a list of questions to form the basis of an annual RH/S Progress Review. The RH/S Committee requested that additional state indices and bycatch information be added to the 2018 update. Information has been updated to the extent available in mid-2021. Covid impacted some data availability.

The following 2017 observation from the Mackerel, Squid, and Butterfish (MSB) Monitoring Committee (MC) reflects previous discussions as well, and is included for reference.

> *The MC noted that its perspective has not substantively changed from last year: given the lack of stock abundance information, a variety of cap options are likely justifiable as long as the Council clearly describes its rationale related to controlling incidental RH/S catch/bycatch - in situations like RH/S where biologically-based catch limits are unavailable, setting the cap is a policy choice. The MC noted that for any cap (and especially a constant cap), because it is not directly tied to RH/S abundance, possibilities exist that it may either become very hard for the fishery to avoid RH/S if their abundances increase, or if RH/S abundances decrease the fishery will not have to work hard to avoid RH/S because there will not be many RH/S around. The first situation would suggest that a cap increase may be warranted while the second would suggest a cap reduction may be warranted. Without better assessment information it is not possible to quantitatively determine the appropriateness of such changes however.*

[1] The Council did not specify any action related to RH/S as part of its Atlantic mackerel emergency action request, so staff anticipates the 2022 RH/S cap would remain at 129 metric tons for the 2022 fishing year, but as discussed before, NMFS has considerable discretion when taking action in response to an emergency action request from the Council.

1. Was a cap set and how has the Atlantic mackerel RH/S cap performed?

The table below describes performance for 2014-2021. 2014 was the first year of the cap and a partial year of implementation, though the cap was estimated retroactively for the full year. The cap initially uses prior year data and then takes a weighted approach with blended prior year and current data until 5 trips have been observed, at which point the cap estimates rely only on current year data. In-year and historical cap rate are available at https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Mackerel_RHS/Mackerel_RHS.htm.

Table 1. River Herring/Shad Catch Cap Performance, 2014-2021[1]

Catch Cap	Year	Permit Count	Trip Count	RH/S Catch %[2]	RH/S CAP	Est. RH/S (mt)	RH/S Closure?	Herring (mt)	Mackerel (mt)	KALL (mt)	Inseason RH/S Catch %[3]	Observed Trips	CV[4]	Coverage Percent
	2014				236	6	no							
RHS Mackerel	2015	13	55	0.1%	89	12.5	no	3,564	4,591	8,739	0.2%	4	0.23	7%
	2016	13	55	0.2%	82	13.5	no	5,684	4,599	10,436	0.2%	13	0.68	24%
	2017	17	71	0.3%	82	39.5	no	6,360	5,822	12,396	0.3%	17	0.38	24%
	2018	12	57	0.9%	82	109	yes	3,891	7,944	12,130	1.0%	4	0.34	7%
	2019	10	31	1.4%	82	91.5	yes	2,780	3,958	6,740	1.5%	2	0.03	7%
	2020	15	93	0.2%	129	22.8	no	2,615	7,404	10,177	0.2%	6	0.5933	6%
	2021[1]	11	42	0.1%	129	3.3	no	1,335	4,816	6,299	0.0%	3	1.2425	7%

Source: GARFO DMIS and OBDBS databases as of September 24, 2021

[1]2021 data are preliminary.

[2]RHS catch rate used to extrapolate RHS catch. Transition rates are used when < 5 observed trips occur within the catch cap year.

[3]RHS catch rate of observed trips occurring within catch cap year. Rate will be different than RHS CATCH RATE column when transition rates were used.

[4]Coefficient of Variation (CV) of inseason observed trips.

As noted in previous updates, due to the overlap in the Atlantic herring and mackerel fisheries, Atlantic herring and Atlantic mackerel RH/S catch cap estimates cannot be summed - this would constitute a misleading double counting. The RH/S on a trip with both Atlantic herring and mackerel can count against both the Atlantic herring and mackerel RH/S caps but because the cap amounts were set considering this circumstance, double counting is not a problem for monitoring within each cap. The Monitoring Committee has previously not found any technical/operational issues with the cap, but noted that low observer coverage has the potential to result in imprecise estimates. Staff sought an update on the NMFS-implemented portside observer program, but given low herring landings minimal data are available. Staff's understanding is that NMFS uses any available portside sampling data as a "double check" if the RH/S caps are approached.

The Council asked in the past about the proportions of RH/S in the caps and size of fish in the caps. While this data has not been updated (program is not running due to lack of Atl. Herring RSA funds), the previous species proportion analysis has been retained for reference. The portside sampling program run by the State of Massachusetts and SMAST provided their weighted 2015-2017 portside sampling data for mid-water trawl landings in Massachusetts and 2015-2016 bottom trawl data in Rhode Island, which should provide a general picture of the RH/S proportions and their sizes in the RH/S caps for those years. The table below is simply the proportions of RH/S within all the RH/S bycatch on sampled herring/mackerel trips, expanded within trips (but not the fisheries) and aggregated by cap types. No amount/weight of bycatch, or bycatch rates should be calculated using these tables. These tables also mask high year-to-year variability (annual data may violate data confidentiality requirements). The first columns are for the Atlantic herring fishery, and the last is for the mackerel fishery. Previous updates may be consulted for RH/S fork length proportions.

Table 2. Proportions of RH/S in portside sampling data by cap type (2015 to 2016/2017).

	Cap Strata					
	Area1A-MWT	Area2-MWT	Area2-SMBT	CC521-MWT	TOTAL from Herring trips in cap areas	TOTAL from Mackerel cap trips
Alewife	41%	15%	61%	60%	30%	36%
Blueback	53%	83%	36%	31%	66%	61%
Am Shad	6%	2%	3%	9%	4%	3%
Total	100%	100%	100%	100%	100%	100%

2. Was the cap based on recent catch or more directly tied to RH/S population dynamics?

To date, the cap has been tied to historical base (2005-2012) RH/S catch rates in the mackerel fishery, and adjusted based on mackerel quotas to maintain incentives for the mackerel fishery to reduce catch. RH/S population dynamics have not been utilized to set the cap given the lack of accepted reference points.

The Council sent a letter to the Science center early in 2021 requesting that Center staff assist in scoping/investigating potential approaches to synthesize survey information in order to discern recent RH/S abundance trends. This was proposed to occur during monitoring committee meetings when RH/S were being discussed. There have been some initial discussions among staffs, but work related to mackerel rebuilding shifted the next addressing of the RH/S cap into decision-making for the second mackerel rebuilding framework. Accordingly, staff intends to revisit this topic with the monitoring committee as cap options are developed for that action.

3. What has recent coastal RH/S catch been? (This analysis is based on NMFS observer data expanded based on dealer/VTR data)

The NEFSC (Kiersten Curti) updated their RH/S incidental catch estimates through 2019. 2020 estimates have not been produced due to substantial observer data gaps from Covid-19. Following Amendment 14 approaches, total incidental catch of river herring (alewife and blueback herring) and hickory and American shad (RH/S) was quantified by fleet. Fleets included in the analyses were those sampled by the Northeast Fisheries Observer Program (NEFOP) and were stratified by area fished (Mid-Atlantic versus New England), time (year and quarter), gear group, and mesh size. Region fished was defined using Statistical Areas for reporting commercial fishery data. The Mid-Atlantic region included Statistical Areas greater than 600, and New England included Statistical Areas 464 through 599.

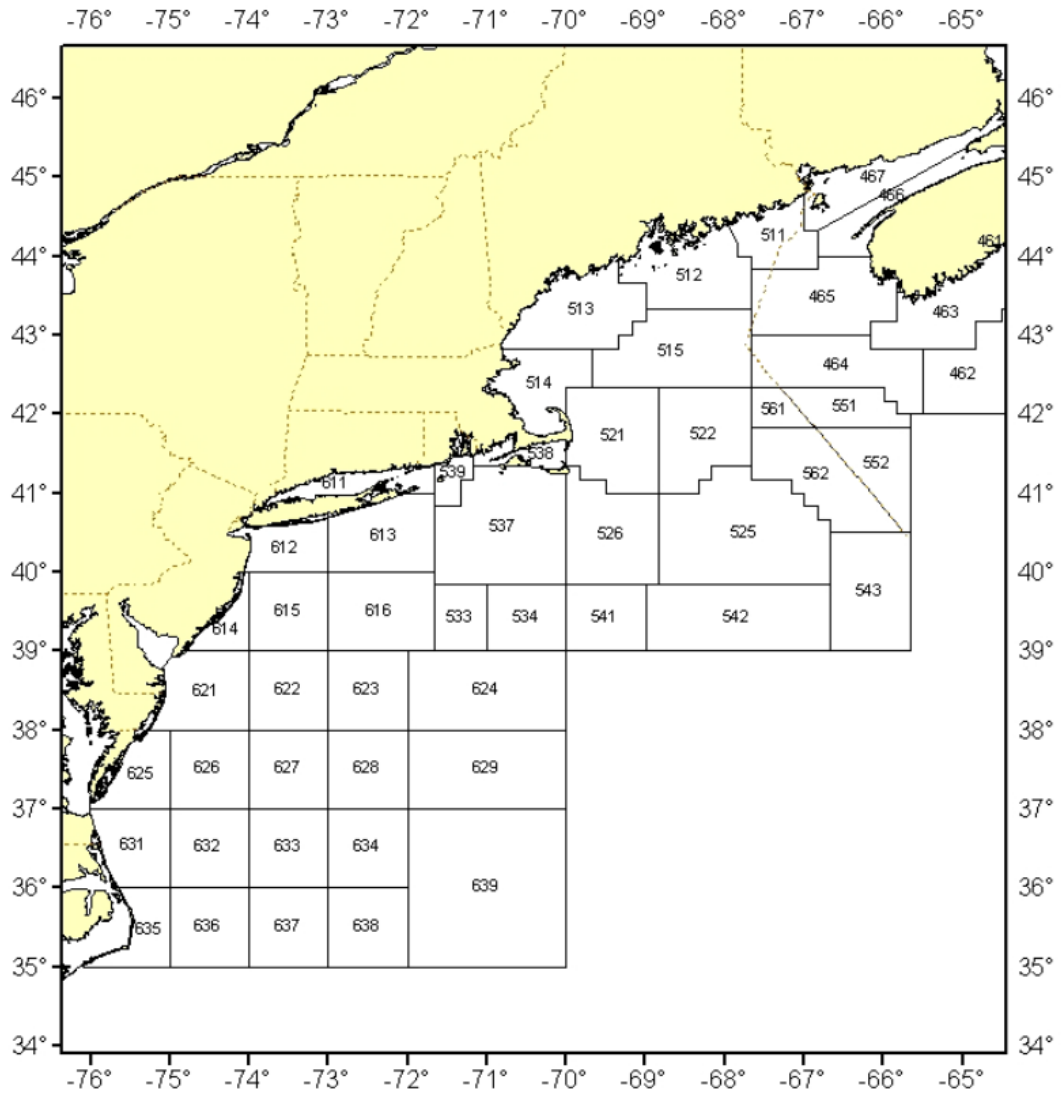

Figure 1. NMFS Statistical Areas

Gear groups included in the analyses were: bottom trawls, paired midwater trawls, single midwater trawls, gillnets, dredges, handlines, haul seines, longlines, pots/traps, purse seines, scallop trawl/dredge, seines and shrimp trawls. Bottom trawls and gillnets were further stratified into the following mesh categories:

Table 3. Gear Definitions

Mesh category	Bottom Trawl	Gillnet
small	mesh ≤ 3.5	mesh < 5.5
medium	3.5 < mesh < 5.5	---
large	mesh ≥ 5.5	5.5 ≤ mesh < 8
x-large	---	mesh ≥ 8

For bottom trawl fleets, mesh category was determined for trips with missing mesh information based on the primary species caught. For gillnets, trips with missing mesh information were assumed to come from the large mesh category.

Single and paired midwater trawls were split into separate fleets because the majority of both mackerel and herring landings during 2005-2010 were from paired midwater trawls, and the total catch-to-kept ratios varied between midwater trawl types. Incidental catch estimates for the midwater trawl fleets are only provided beginning in 2005 because these estimates are most accurate as a result of improved sampling methodologies.

For each trip, NEFOP data were used to calculate a total catch to kept (t/k) ratio, where t represents the total (retained+discarded) catch of an individual species (e.g., alewife, American shad) and k is the kept weight of all species. The t/k ratios were expanded using a raising factor to quantify total incidental catch. With the exception of the midwater trawl fleets, total landed weight of all species (from the dealer database) was used as the raising factor. VTR data were used as the expansion factor for the MWT fleets.

Table 4. Species-specific total annual incidental catch (mt) and the associated coefficient of variation across all fleets and regions. Midwater trawl estimates were only included beginning in 2005 so the time series is not totally comparable spanning before/after 2005. Total RHS represents the sum of the four river herring and shad species (alewife, American shad, blueback herring and hickory shad). (Update of Table A1 of Amendment 14 Appendix 2)

	Alewife		American shad		Blueback herring		Hickory shad		Total RHS		Herring, NK	
	Catch	CV	Catch	CV	Catch	CV	Catch	CV	Catch	CV	Catch	CV
1989	44	0.49	229	0.98	38	0.42	0		311	0.73	18	1.13
1990	102	0.85	45	0.34	170	0.45	0		317	0.37	681	0.59
1991	149	0.44	176	0.25	285	0.40	39	0.00	649	0.23	266	0.51
1992	66	0.43	169	0.28	1,191	0.42	0		1,426	0.36	786	0.39
1993	381	2.42	211	1.00	746	0.28	0		1,338	0.76	136	4.83
1994	6	0.30	110	0.64	240	0.87	1	0.82	357	0.53	58	0.47
1995	8	0.61	127	0.38	348	0.44	1	0.64	485	0.34	100	1.23
1996	704	1.14	65	0.39	2,800	2.09	222	1.04	3,791	1.75	451	0.39
1997	49	1.36	66	0.61	1,594	0.69	21	1.25	1,730	0.64	90	5.09
1998	146	1.47	161	0.23	77	1.52	480	0.72	863	0.55	228	2.08
1999	6	1.16	82	0.41	359	0.60	209	0.94	656	0.44	3,457	0.74
2000	112	0.82	262	0.78	110	0.45	2	0.76	487	0.47	71	0.78
2001	190	0.84	68	0.39	310	0.32	330	0.27	898	0.30	3	0.44
2002	4	3.35	44	0.40	269	0.33	2	0.83	319	0.28	124	1.88
2003	388	1.43	60	0.54	527	0.56	19	0.85	994	0.63	26	1.17
2004	163	0.64	53	0.36	232	0.46	402	1.13	850	0.57	237	0.74
2005	404	0.40	94	0.28	255	0.34	27	0.34	781	0.27	29	0.58
2006	79	0.83	78	9.73	191	0.66	25	0.78	373	2.08	268	1.10
2007	544	0.71	79	0.56	188	1.42	17	0.90	828	0.79	357	0.91
2008	159	0.42	74	0.29	539	0.56	3	0.86	775	0.40	1,669	0.50
2009	154	0.26	107	2.00	195	0.30	10	0.72	465	0.50	351	0.66
2010	135	0.19	61	0.16	132	0.20	1	0.59	329	0.15	104	0.33
2011	97	0.34	104	0.12	28	0.30	0	0.77	229	0.16	127	0.28
2012	174	0.24	77	0.16	249	0.31	1	0.55	500	0.21	92	0.30
2013	239	0.33	73	0.41	29	0.46	0	0.76	342	0.26	75	0.69
2014	84	0.14	64	0.19	30	0.24	1	0.39	178	0.11	77	0.44
2015	124	0.31	46	0.15	83	0.48	2	0.75	255	0.23	40	0.75
2016	102	0.29	42	0.17	54	0.19	21	0.47	219	0.16	53	0.55
2017	141	0.19	44	0.14	82	0.26	3	0.32	271	0.15	182	0.30
2018	221	0.16	49	0.12	196	0.22	13	0.55	480	0.12	28	0.31
2019	162	0.36	117	0.26	73	0.06	7	0.24	359	0.20	42	0.79

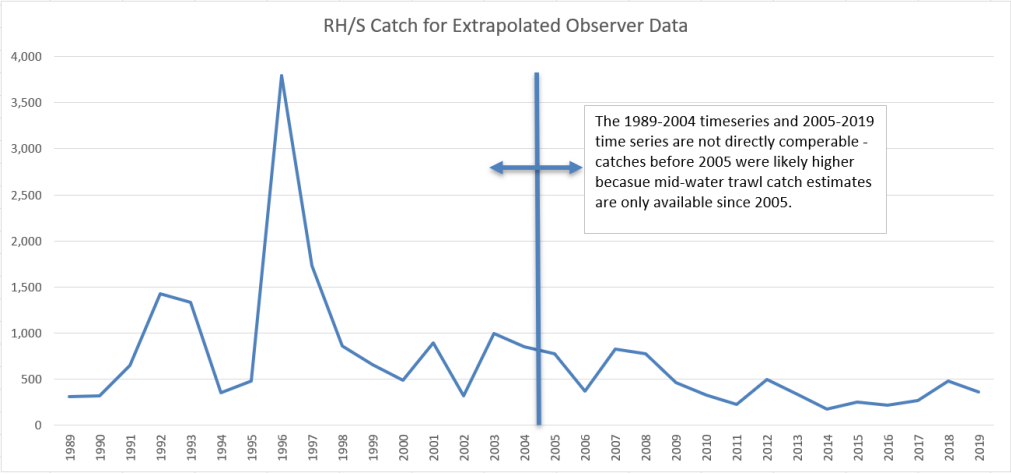

Figure 2. RH/S Catch Estimates 1989-2019 (from Table 4)

Table 5. Proportion of 2005-2019 incidental catch of all river herring and shad species (alewife, blueback herring, American shad and hickory shad) by region, fleet and quarter for the dominant gears. (Update of Table 3 of Amendment 14 Appendix 2)

		BT			Gillnet			Paired MWT	Single MWT	Total MWT	Grand Total
Area fished	Quarter	sm	med	lg	sm	lg	xlg				
MA	1	0.032	0.003	0.001	0.003	0.006	0.000	0.180	0.043	0.223	0.268
MA	2	0.022	0.001	0.001	0.000	0.004	0.000	0.009	0.003	0.012	0.042
MA	3	0.052	0.000	0.001	0.000	0.003	0.000	0.000	0.002	0.002	0.059
MA	4	0.020	0.002	0.001	0.001	0.004	0.000	0.004	0.000	0.005	0.033
MA		0.127	0.006	0.004	0.005	0.018	0.000	0.193	0.048	0.241	0.402
NE	1	0.078	0.000	0.006	0.000	0.005	0.000	0.022	0.010	0.031	0.121
NE	2	0.060	0.000	0.006	0.000	0.008	0.000	0.033	0.027	0.060	0.135
NE	3	0.093	0.000	0.005	0.000	0.018	0.000	0.039	0.013	0.052	0.168
NE	4	0.053	0.000	0.005	0.000	0.011	0.000	0.071	0.033	0.104	0.175
NE		0.284	0.001	0.023	0.000	0.042	0.000	0.165	0.083	0.248	0.598
Total		0.411	0.007	0.027	0.005	0.060	0.000	0.358	0.131	0.489	1.000

Table 6. Proportion of 2005-2019 incidental catch of American and hickory shad by region, fleet and quarter for the dominant gears. (Update of Table 4 of Amendment 14 Appendix 2)

		BT			Gillnet			Paired MWT	Single MWT	Total MWT	Grand Total
Area fished	Quarter	sm	med	lg	sm	lg	xlg				
MA	1	0.045	0.009	0.004	0.015	0.032	0.000	0.035	0.004	0.039	0.144
MA	2	0.038	0.004	0.003	0.002	0.023	0.000	0.003	0.000	0.003	0.074
MA	3	0.084	0.001	0.002	0.001	0.017	0.000	0.000	0.000	0.000	0.105
MA	4	0.026	0.006	0.003	0.006	0.022	0.000	0.001	0.000	0.001	0.064
MA		0.193	0.020	0.011	0.025	0.093	0.000	0.039	0.005	0.044	0.387
NE	1	0.045	0.001	0.020	0.000	0.023	0.000	0.007	0.002	0.009	0.098
NE	2	0.047	0.001	0.021	0.000	0.041	0.001	0.013	0.004	0.017	0.127
NE	3	0.071	0.001	0.016	0.000	0.091	0.001	0.018	0.010	0.028	0.207
NE	4	0.035	0.001	0.017	0.000	0.058	0.000	0.027	0.041	0.069	0.180
NE		0.198	0.005	0.074	0.000	0.212	0.002	0.065	0.057	0.122	0.613
Total		0.392	0.025	0.085	0.025	0.305	0.002	0.104	0.062	0.166	1.000

Table 7. Proportion of 2005-2019 incidental catch of river herring (alewife and blueback herring) by region, fleet and quarter for the dominant gears. (Update of Table 5 of Amendment 14 Appendix 2)

		BT			Gillnet			Paired MWT	Single MWT	Total MWT	Grand Total
Area fished	Quarter	sm	med	lg	sm	lg	xlg				
MA	1	0.029	0.001	0.001	0.000	0.000	0.000	0.215	0.052	0.267	0.298
MA	2	0.019	0.000	0.001	0.000	0.000	0.000	0.010	0.004	0.014	0.034
MA	3	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.048
MA	4	0.019	0.001	0.001	0.000	0.000	0.000	0.005	0.000	0.005	0.026
MA		**0.111**	**0.002**	**0.003**	**0.000**	**0.000**	**0.000**	**0.230**	**0.059**	**0.289**	**0.406**
NE	1	0.086	0.000	0.003	0.000	0.000	0.000	0.026	0.011	0.037	0.126
NE	2	0.063	0.000	0.003	0.000	0.000	0.000	0.038	0.033	0.071	0.137
NE	3	0.098	0.000	0.002	0.000	0.000	0.000	0.045	0.013	0.058	0.158
NE	4	0.058	0.000	0.002	0.000	0.000	0.000	0.082	0.031	0.113	0.173
NE		**0.305**	**0.001**	**0.010**	**0.000**	**0.000**	**0.000**	**0.190**	**0.089**	**0.279**	**0.594**
Total		**0.416**	**0.003**	**0.013**	**0.000**	**0.000**	**0.000**	**0.420**	**0.148**	**0.568**	**1.000**

The estimated catches and proportions above are by gear and area which follows the general SBRM estimation protocol and ensures trips are assigned to unique gear/area fleets. One question that often follows review of these tables is what directed fisheries were responsible for the small-mesh bottom trawl and large-mesh gillnet catches (mid-water trawl is going to be

mackerel/herring). In order to get a general sense of the answer to this question, Council staff previously binned the raw observed catch data by whatever species was retained the most (by weight) on each trip. No extrapolations have been or should be done. After tagging each observer record with a "most retained species on the trip" label, the RH/S catch was sorted by these labels. Since the raw amount of observed RH/S depends on the encounter rate, fishery effort, and observer coverage, the order of the top species is not necessarily meaningful – but likely provide a general indication of which fisheries are most responsible for observed RH/S catch. The results are also likely highly sensitive to how the RH/S catch is binned. For river herring in bottom trawls, from 2013-2017 88% of the raw observed river herring were seen in trips where the top retained species included Atlantic herring, longfin squid, silver hake, and mackerel. For shad in bottom trawls, from 2013-2017 77% of the raw observed shad were seen in trips where the top retained species included longfin squid, silver hake, scup, Atlantic herring, and *Illex*. For shad in gillnets, from 2013-2017 82% of the raw observed shad were seen in trips where the top retained species included hickory shad, pollock, spiny dogfish, and menhaden. The update completed for the August 2018 Council Meeting contained tables with additional detail.

Taking another approach used for general fishery incidental catch description, the 2018-2020 squid specifications environmental assessment made rough RH/S catch extrapolations for the longfin squid fishery based on 2014-2016 landings and observer data, and estimated that around 57 MT of RH/S (mostly alewife and American shad) would be caught incidentally in a year if 14,000 MT of squid was landed in a year (14,000 MT was the average of longfin squid landings 2014-2016).

The ASMFC annual fishery management plan reviews are available at http://www.asmfc.org/species/shad-river-herring. Summary landings data from 2012-2019 for river herring and American shad from ME-FL are provided below. The reviews have data on hickory shad but landings are relatively low. Most of these landings are in-river but there may be some incidental catch that is overlapped with the tables above, so the numbers cannot be added. Most of the landings in recent year have been outside of the Mid-Atlantic states.

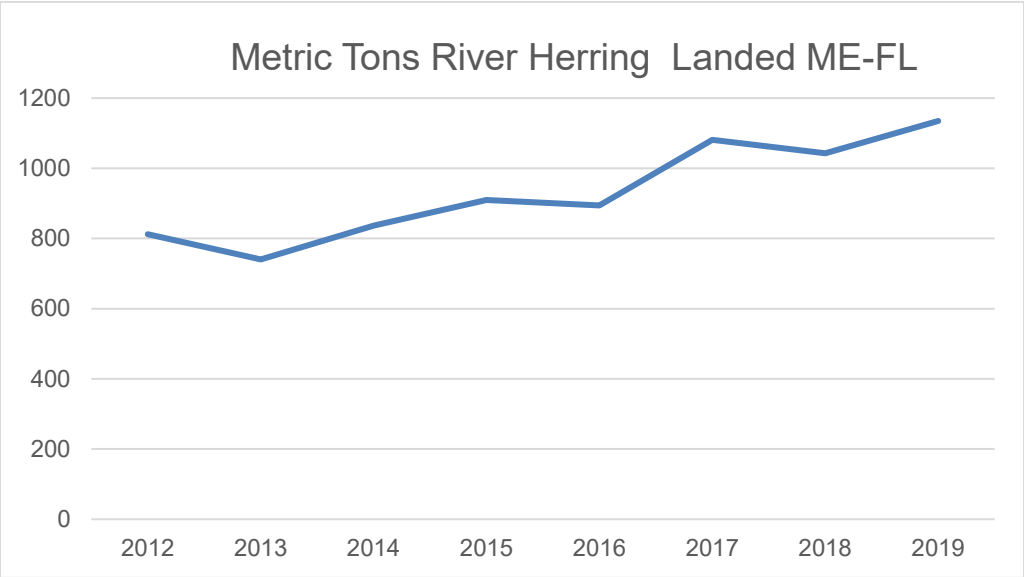

Figure 3. River herring landings reported by states

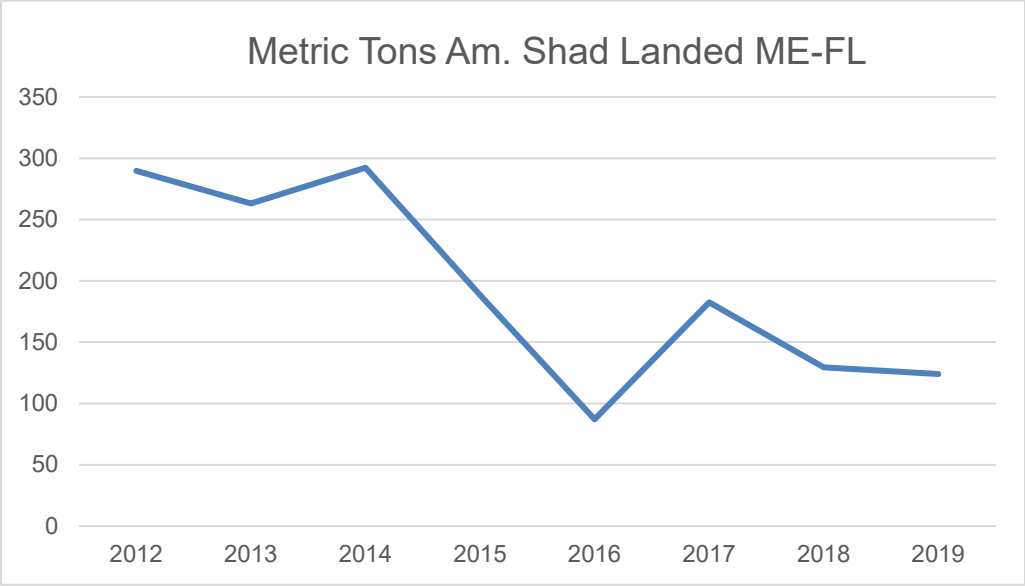

Figure 4. American shad landings reported by states

4. What levels of observer coverage have been achieved in relevant fisheries?

See the inventory of trip tables below by fleet (not by fishery) for observed trips versus total dealer/VTR trips. In 2019, coverage for the gears of most concern were: 23% of Mid-Atlantic small mesh bottom trawl trips; 11% of New England small mesh bottom trawl trips; 5% of Mid-Atlantic mid-water trawl trips; and 8% of New England mid-water trawl trips.

Table 11. Mid-Atlantic Trawl Trips

	Number of trips									
	Bottom trawl						Midwater trawl			
	Small mesh		Medium mesh		Large mesh		Single		Paired	
Year	Observer	Dealer	Observer	Dealer	Observer	Dealer	Observer	VTR	Observer	VTR
1989	29	4,180	7	412	4	2,627				
1990	31	3,745	19	386	0	2,864			0	0
1991	61	3,994	20	361	4	3,699	5	0	0	0
1992	39	3,080	12	283	14	4,719			9	0
1993	9	2,965	7	103	12	5,904			14	0
1994	8	3,857	8	156	21	4,865	1	64	30	44
1995	60	4,731	3	330	55	6,745	0	120	33	50
1996	70	4,699	10	652	18	6,500	0	252	0	14
1997	41	5,174	10	692	9	6,554	0	205	0	6
1998	29	5,269	4	784	13	6,866	0	238	0	34
1999	28	4,655	9	777	8	6,712	0	207	0	26
2000	28	4,575	12	806	26	5,938	5	193	1	74
2001	42	3,783	13	879	50	6,493	0	169	0	58
2002	15	3,475	18	998	39	6,958	0	71	1	107
2003	21	2,168	53	795	16	7,107	0	115	5	196
2004	111	2,408	156	692	109	6,796	2	99	8	249
2005	74	1,422	109	466	93	8,441	4	75	11	224
2006	101	2,349	54	736	71	6,938	8	74	6	184
2007	86	2,197	139	711	160	5,982	1	86	2	84
2008	68	2,254	86	698	132	6,171	8	17	8	146
2009	169	2,507	126	654	167	6,953	5	27	20	166
2010	183	2,306	193	415	276	5,577	4	15	13	84
2011	235	2,285	155	584	254	6,319	4	3	22	44
2012	133	2,422	111	727	169	5,117	4	35	7	40
2013	219	2,232	195	942	251	4,755	1	45	2	33
2014	228	2,113	227	883	269	4,183	1	47	0	18
2015	176	1,718	201	805	231	4,366	2	32	1	25
2016	394	2,381	298	1029	286	4,182	2	26	1	14
2017	612	2,615	370	991	332	3,184	4	32	2	14
2018	527	2,537	328	938	281	3,293	1	27	4	31
2019	524	2,254	322	733	365	3,854	0	19	2	25

Table 12. New England Trawl Trips

	Number of trips									
	Bottom trawl						Midwater trawl			
	Small mesh		Medium mesh		Large mesh		Single		Paired	
Year	Observer	Dealer	Observer	Dealer	Observer	Dealer	Observer	VTR	Observer	VTR
1989	72	5,060	15	528	57	21,439			0	0
1990	33	4,850	4	355	54	21,518			0	0
1991	84	4,372	13	156	78	22,429	2	0	0	0
1992	56	4,157	1	120	68	22,518	0	0	0	0
1993	21	5,054	10	153	44	21,468	0	0	7	0
1994	13	5,522	5	239	36	21,084	0	306	4	53
1995	37	4,217	3	154	68	20,376	4	785	2	11
1996	48	3,893	2	52	44	19,750	0	897	0	18
1997	19	3,788	4	100	29	17,417	0	701	0	93
1998	5	4,198	1	94	13	18,156	0	512	0	170
1999	19	3,915	0	214	41	16,345	1	521	2	164
2000	8	3,338	9	124	103	17,473	7	462	0	368
2001	8	2,834	11	173	157	17,372	1	336	0	629
2002	35	2,184	30	221	220	17,480	0	373	0	653
2003	46	2,226	27	184	387	16,813	2	251	18	617
2004	88	1,822	85	152	531	13,384	23	253	60	585
2005	84	1,507	173	131	1350	11,902	43	265	91	465
2006	49	1,939	37	299	619	10,612	10	194	21	490
2007	58	2,146	18	213	621	10,760	10	87	11	235
2008	46	2,382	16	176	753	11,012	11	33	36	185
2009	195	2,296	26	270	879	10,936	10	47	67	225
2010	206	2,600	55	253	1054	9,424	29	57	106	215
2011	164	1,854	31	246	1597	8,353	24	59	89	252
2012	138	2,146	30	390	1551	8,358	30	122	131	246
2013	191	1,856	56	510	1095	7,344	27	181	69	235
2014	281	1,972	56	540	1198	6,404	28	141	74	237
2015	242	2,093	60	538	897	6,106	6	154	10	193
2016	282	3,098	60	711	632	5,093	21	163	28	131
2017	589	2,616	166	597	633	5,070	12	92	17	124
2018	359	2,143	84	464	673	5,303	3	58	3	72
2019	257	2,328	82	302	988	5,373	5	40	0	19

5. What progress has been made on aligning cap operation with the Atlantic herring fishery's cap?

Catches of both Atlantic herring and mackerel are considered in the cap setting and estimation for all the RH/S caps. The Council has evaluated the potential to pursue further alignment, but decided that given the different policy approaches currently used by each Council, additional alignment is not the best course of action.

6. What other RH/S coordination with other management partners has occurred (NMFS, NEFMC, ASMFC, states, NGOs, academia, TEWG, etc.)?

Council and ASMFC staffs are in regular contact to ensure that each entity remains apprised of current developments. The river herring TEWG (Technical Expert Working Group) has morphed into the Atlantic Coast River Herring Collaborative Forum – designed as "an information exchange venue to bring together river herring practitioners, managers, researchers, and community groups from across the species range." This forum continues to meet, and the next meeting is scheduled for November 1, 2021 1-4 pm.

7. How has the Scientific and Statistical Committee (SSC) been involved?

The SSC has expressed willingness to review any potential options for biologically-based caps or other relevant work.

8. What other actions have been taken by the Council that could affect RH/S?

Staff developed several white papers in late 2020/early 2021 regarding New England alignment (see #5 above), spatial considerations (see below and Appendix 2), and moving toward a biologically-based cap (see #2 above). Staff also intends to build out the River Herring Run Story Map by the end of the year, with some number of publicly available runs at least initially.

For the spatial consideration analysis in Appendix 2, staff had previously identified several areas with higher observed RH/S catch, and the idea was that if some of those areas consistently had low value of catches, spatial management might be worth considering. Unfortunately all the areas appear to have substantial revenues occurring in some of the time periods examined, so staff's initial conclusion is that there is no immediately apparent locations that if closed would have both low impact on relevant fleets and high benefits for RH/S (see Appendix 2 pages 1-6). The danger of area closures is that increased effort or effort shifts out of highly productive areas could lead to similar or worse RH/S encounter rates elsewhere. Several of the areas have also recently been affected by New England's mid-water trawl near-shore buffers (see Figure 5 next page).

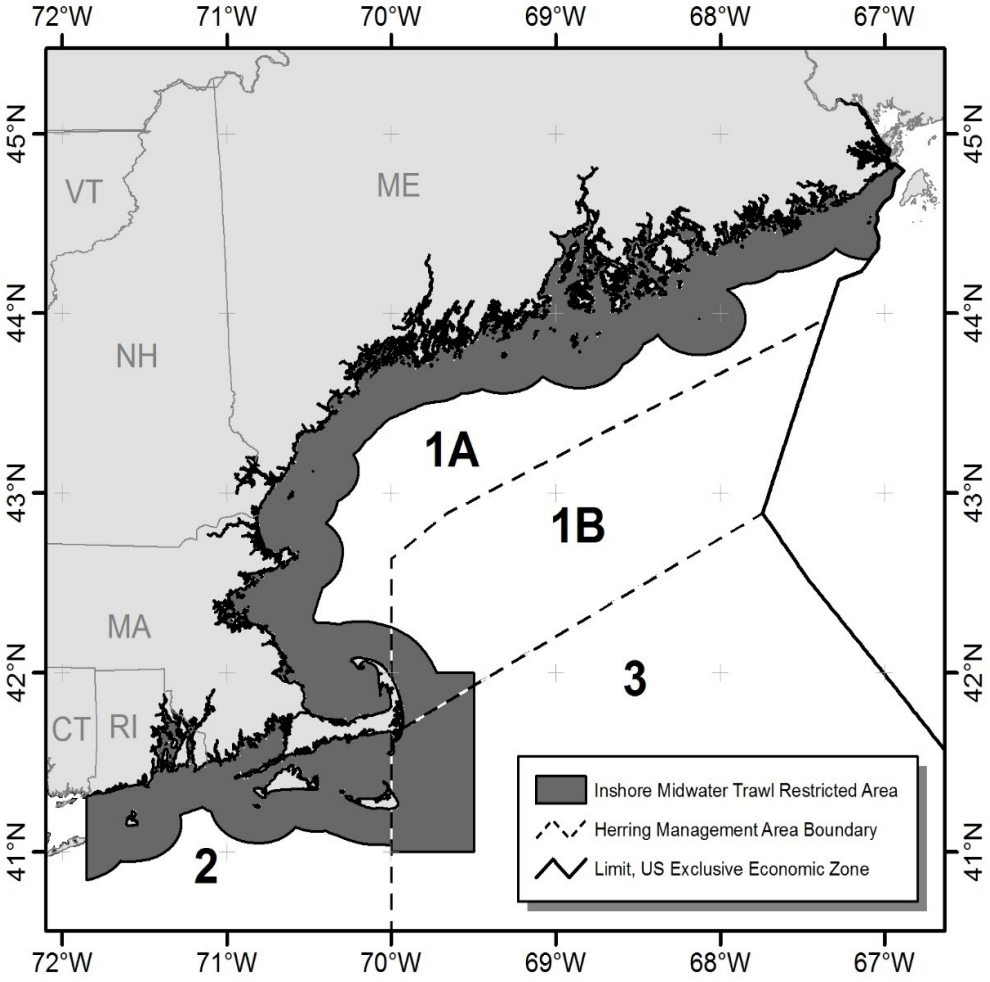

Figure 5. NE Inshore Mid-water Trawl Restricted Areas

9. What other information is available on RH/S abundance trends?

From the ASMFC's website: http://www.asmfc.org/species/shad-river-herring

The 2020 American shad benchmark stock assessment is the most recent assessment for the American shad stock. Similar to the results of the 2007 assessment, the 2020 assessment found coastwide populations to be depleted. Multiple factors, such as overfishing, inadequate fish passage at dams, predation, pollution, water withdrawals, channelization of rivers, changing ocean conditions, and climate change are likely responsible for the decline from historic shad abundance levels. Additionally, the assessment found that shad recovery is limited by restricted access to spawning habitat, with 40% of historic habitat in the U.S. and Canada currently blocked by dams and other barriers. This may equate to a loss of more than a third of spawning adults.

The 2017 [RH/S] stock assessment update indicates that river herring remain depleted at near historic lows on a coastwide basis. Total mortality estimates over the final three years of the data time series (2013-2015) are generally high and exceed region-specific reference points for some rivers. However, there are some positive signs of improvement for some river systems. Total mortality estimates for 2 rivers have fallen below region-specific reference points during the final three years of the data time series, compared to the zero estimates that were below reference points at the end of the 2012 stock assessment data time series. Of the 54 stocks for which data were available, 16 experienced increasing abundance, 2 experienced decreasing abundance, 8 experienced stable abundance and 10 experienced no discernable trend in abundance over the final 10 years of the time series (2006-2015).

Several indices that the NEFSC and/or states provided are included in Appendix 1, updated with information available at the time of a 2021 request.