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October 16, 2017

#### Via regulations.gov

Tara Trinko Lake National Marine Fisheries Service Greater Atlantic Regional Fisheries Office 55 Great Republic Drive Gloucester, Massachusetts 01930

Re: Comments of the Utility Water Act Group in Response to the National Marine Fisheries Service Status Review for Alewife and Blueback Herring Under the Endangered Species Act, 82 Fed. Reg. 38,672 (Aug. 15, 2017), NOAA-NMFS-2017-0094

Dear Ms. Lake:

The Utility Water Act Group ("UWAG") submits the attached comments to respond to the National Marine Fisheries Service status review for alewife and blueback herring under the Endangered Species Act, 82 Fed. Reg. 38,672 (Aug. 15, 2017).

UWAG appreciates the opportunity to comment on this important matter.

Sincerely, grat

Kerry L. McGrath

Attachment



Comments of the Utility Water Act Group in Response to the National Marine Fisheries Service Status Review for Alewife and Blueback Herring Under the Endangered Species Act, 82 Fed. Reg. 38,672 (Aug. 15, 2017)

> 170718681-7735-01 NOAA-NMFS-2017-0094

> > October 16, 2017

## **Table of Contents**

I.	Introdu	Introduction			
II.	Background				2
	A.	2013 Decision Not to List Blueback Herring or Alewife as Threatened or Endangered			2
	B.	NRDC v. Rauch Decision			3
III.	Information Submitted to Support NMFS' Status Review				4
		1.	Abundance of River Herring		
		2.	Produc	tivity of River Herring	7
		3.	River I	Herring Distribution or Population Spatial Structure	7
		4.	Pattern	s of Phenotypic, Genotypic, and Life History Diversity	8
		5.	Habitat Conditions and Associated Limiting Factors and Threats		
		6.	Ongoing or Planned Efforts to Protect and Restore River Herring and Their Habitats		8
			a.	Fisheries Management	10
			b.	Improvements in Fish Passage	10
			c.	Habitat Protection and Restoration	11
			d.	Protective CWA Actions	12
		7.	Adequ Regula	acy, Implementation, and Effectiveness of Existing tory Mechanisms	13
		8.	Status	and Trends of Identified Limiting Factors or Threats	13
		9.	Impacts of Environmental Variability and Climate Change on Survival, Recruitment, Distribution, and/or Extinction Risk		
IV.	Conclu	usion			14

### I. Introduction

The Utility Water Act Group ("UWAG")<sup>1</sup> submits these comments to respond to the National Oceanic and Atmospheric Administration's ("NOAA") initiation of a new status review for the alewife and blueback herring, and to provide information that has become available since National Marine Fisheries Service's ("NMFS") 2013 decision not to list the species as threatened or endangered under the Endangered Species Act ("ESA"), 16 U.S.C. 1531 *et seq.*, 82 Fed. Reg. 38,672 (Aug. 15, 2017) (initiation of status review); 78 Fed. Reg. 48,944 (Aug. 12, 2013) (2013 decision not to list).

Blueback herring and alewife (collectively referred to as "river herring") are similar in appearance, spawn in freshwater rivers, and then mature in the Atlantic Ocean. Many UWAG members own or operate facilities along the numerous water bodies where river herring occur and collect data and other information on river herring and other aquatic species in order to comply with existing regulatory requirements associated with the licensing and operation of those facilities. Because UWAG members follow river herring trends and developments in management of the species, UWAG members are well positioned to respond to NMFS' request for information that is relevant to the status and trends of alewife and blueback herring and management actions necessary to protect and recover the species. Unfortunately, as a result of litigation deadlines, UWAG has been provided only a limited opportunity to collect and provide that data in response to this status review.<sup>2</sup> UWAG's review of technical information was done with assistance by Craig Johnson, who formerly worked for NOAA Fisheries as the National Consultation Coordinator, and now works as an independent consultant.

The alewife and blueback herring are on a positive trajectory, thanks to important new legal protections that have been instituted under fishery conservation laws. River herring have been commercially fished for 140 years from Canada to Florida. While their numbers declined in the late 20th century primarily due to overfishing, significant new legal protections have been implemented, and the species has stabilized and is showing key signs of improvement. Because of regulatory mechanisms already in place to protect and recover the species, coupled with signs of their overall improvement, the data available suggest alewife and blueback herring do not warrant listing under the ESA. The management actions and restoration activities taken pursuant

<sup>&</sup>lt;sup>1</sup> UWAG is a voluntary, non-profit, unincorporated group of 162 individual energy companies, which own and operate over fifty percent of the nation's total generating capacity, and three national trade associations of energy companies: the Edison Electric Institute, the American Public Power Association, and the National Rural Electric Cooperative Association. UWAG's purpose is, among other things, to participate on behalf of its members in rulemakings, such as this action, involving ESA issues with a nexus to the Clean Water Act ("CWA"), 33 U.S.C. § 1251 *et seq*.

<sup>&</sup>lt;sup>2</sup> UWAG requested an extension of the comment period, but NMFS denied the request, stating "Due to the limited time available to prepare the status review and listing decision as dictated by a court ordered deadline of January 31, 2019, we cannot extend the deadline for the request for information." Letter from Kimberly Damon-Randall, Assistant Regional Administrator for Protected Resources, Greater Atlantic Regional Fisheries Office, to Kerry L. McGrath, Counsel for UWAG (Sept. 26, 2017).

to the Shad and River Herring Fish Management Plan ("FMP"), the River Herring Conservation Plan, and NOAA's Habitat Blueprint, discussed in more detail below, are already addressing the primary threats to the both species, have reversed their decline to the point that their status has substantially improved over the past five years, and appear likely to recover the species. Indeed, the overall available data from the 2017 stock assessments demonstrates that 29.6 percent of the in-river stocks were increasing, 48.4 percent were stable, 18.3 percent lacked sufficient data to determine a trend, and only 3.7 percent were decreasing. This is a dramatic change over just five years, particularly for a species that is naturally prone to short-term population variation within individual geographic stocks.<sup>3</sup> This change suggests that management actions taken over the past decade and that continue to be undertaken are reversing the species' decline.

As explained herein, the information that has become available in the last four years confirms and further demonstrates that the alewife and blueback herring do not warrant the protections of the ESA as a matter of science or law.

## II. Background

River herring can be found along the Atlantic coast of North America, from the southern Gulf of St. Lawrence, Canada, to the southeastern United States. The coastal ranges of blueback herring and alewife overlap. The blueback herring ranges from Nova Scotia to the St. John's River in Florida; and alewife ranges from Labrador and Newfoundland south to South Carolina. Although commercial landings of river herring declined in the latter half of the 20th century, those landings stabilized over a decade ago and are showing signs of improvement. Significant new protections have been added to the broad framework of federal, state, and tribal regulations that govern the species, and extensive conservation initiatives are underway. The following section discusses the 2013 NMFS decision not to list the blueback herring or alewife and the district court decision evaluating the blueback herring listing decision, which provide important context for NMFS' new status review.

## A. 2013 Decision Not to List Blueback Herring or Alewife as Threatened or Endangered

In 2013, NMFS determined that listing was not warranted for the blueback herring or alewife. 78 Fed. Reg. 48,944. NMFS evaluated the species' current status and trends, as well as the threats that were impacting the species at the time of the listing decision. NMFS noted that "[m]any conservation efforts are underway that may lessen the impact of some of these threats into the foreseeable future" and addressed moratoria and protections that were put in place in the years leading up to the 2013 decision not to list the blueback herring or alewife. *Id.* at 48,992.

<sup>&</sup>lt;sup>3</sup> The improvements reported in the 2017 Atlantic States Marine Fisheries Commission ("ASMFC") Stock Assessment Update reflect a trend over at least a ten-year period. ASMFC scientists used auto-regressive integrated moving averages to analyze this time series, which allowed them to filter out the effects of natural variability (ASMFC 2017a). The 2017 ASMFC report called for monitoring to continue until 2022, in part, to ensure that there is enough data to filter out natural variability for all river herring populations.

NMFS found that, "[c]urrently, neither species is experiencing high rates of decline coast-wide as evidenced by the rangewide trends (significantly increasing for alewife and stable for blueback herring)." *Id.* at 48,992. As a result, NMFS concluded that the two species are not in danger of extinction or likely to become so in the foreseeable future. *Id.* at 48,993.

In addition, NMFS noted that "evidence for genetic differentiation exists for both alewife and blueback herring, allowing for preliminary identification of stock complexes; however, available data are lacking on the significance of these individual complexes," *id.* at 48,950, and therefore concluded that there was not enough evidence to suggest that the stock complexes should be treated as separate distinct population segments ("DPSs") under the Services' 1996 DPS Policy. *Id.* at 48,948.

NMFS also assessed the status of each of the individual stock complexes in order to determine whether either species is threatened or endangered in a "significant portion of its range." *Id.* at 48,993. NMFS explained that all of the alewife stock complexes as well as the coast-wide trend are either stable or increasing. *Id.* For blueback herring, NMFS concluded that, although the 2012 stock assessment suggested that the mid-Atlantic stock complex was decreasing, that stock complex "is not so significant that its hypothetical loss would render the species endangered" and does not constitute a significant portion of the blueback herring range. *Id.* 

## B. NRDC v. Rauch Decision

On March 25, 2017, the U.S. District Court for the District of Columbia found that the analytical methodology employed by NMFS in its decision not to list the blueback herring<sup>4</sup> was arbitrary and capricious, remanding the matter back to the Service for further consideration. *Natural Resources Defense Council v. Rauch*, 244 F. Supp. 3d 66 (D.D.C. 2017). The court directed NMFS to complete a new listing determination for blueback herring and publish in the *Federal Register* no later than January 31, 2019, a notice making one of the three required findings as set forth in 16 U.S.C. § 1533(b) (*i.e.*, declare the species does not warrant listing; propose the species for "threatened" or "endangered" status; or announce that listing is warranted but precluded by other, higher priority actions).

In its decision to remand the listing determination, the court found that NMFS' reasoning for its conclusion that the mid-Atlantic stock complex does not constitute a significant portion of the blueback herring range was flawed in two ways. First, the court found that the determination was arbitrary and capricious because the determination relied on NMFS' finding that the coast-wide trend was stable when NMFS did not have enough information to make a statistically robust determination one way or another for the mid-Atlantic segment. *Id.* at 94. Second, the court found that NMFS erroneously treated the coast-wide stock as wholly independent of the mid-Atlantic stock complex, failing to account for the extent to which the extirpation of that stock complex would affect the coast-wide population. *Id.* at 95.

Similarly, the court held that NMFS' reasoning for its conclusion that blueback herring are not threatened throughout their range was flawed because it depended on the Service's

<sup>&</sup>lt;sup>4</sup> Plaintiffs did not challenge the listing determination for the alewife.

determination that the coast-wide stock complex and three of the four regional complexes were "stable," even though NMFS lacked statistically sufficient information to tell whether those discrete segments were actually stable or not. *Id.* at 96-97. The court ordered the Service on remand to conduct a new "through all of its range" analysis in which it may not, at least without reasoned explanation, accept the lack of statistically significant evidence of decline as proof that the population is "stable." *Id.* at 97.

Finally, the court found that NMFS' "distinct population segment" analysis was flawed because NMFS did not adequately consider whether any "discrete" segment of the species also qualifies as "significant" under the Services' 1996 DPS policy. *Id.* at 99-100. The court found that NMFS failed to consider the first "significance" factor of the 1996 DPS policy – whether the persistence of the discrete population segment in an ecological setting is unusual or unique for the taxon. *Id.* at 99.

Importantly, the district court's decision was inherently limited to the administrative record as of August 2013 and to the basis and explanation provided for NMFS' blueback herring listing decision at that time. Now over four years later, as discussed in more detail in Section III.6, the species faces a different conservation landscape with significant protections that have been put in place, the species has seen four more years of stability and population increases, and far more information is available. Although there will be even more information regarding the effectiveness of the conservation efforts undertaken by 2022 (once there has been a complete generation of river herring with these protections in place), recent data suggest that the fishery management actions and habitat restoration activities being implemented have been effective and have improved the river herring's status substantially. These trends are especially promising given the short amount of time since the last stock assessments.

### III. Information Submitted to Support NMFS' Status Review

On August 15, 2017, NOAA published a notice that announced initiation of a new status review of alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) to determine whether listing either species as endangered or threatened under the ESA is warranted. 82 Fed. Reg. at 38,672. A comprehensive status review must be based on the best scientific and commercial data available at the time of the review. 16 U.S.C. § 1533(b)(1)(A). Therefore, NOAA asked the public to provide such information on alewife and blueback herring that has become available since the listing determination in 2013. Specifically, NOAA requested information on:

- 1. the species' abundance;
- 2. the species' productivity;
- 3. species' distribution or population spatial structure;
- 4. patterns of phenotypic, genotypic, and life history diversity;
- 5. habitat conditions and associated limiting factors and threats;
- 6. ongoing or planned efforts to protect and restore the species and their habitats;

- 7. the adequacy of existing regulatory mechanisms and whether protections are being implemented and are proving effective in conserving the species;
- 8. data concerning the status and trends of identified limiting factors or threats;
- 9. information concerning the impacts of environmental variability and climate change on survival, recruitment, distribution, and/or extinction risk;
- 10. other new information, data, or corrections including, but not limited to, taxonomic or nomenclature changes, identification of erroneous information in the previous listing determination, and improved analytical methods for evaluating extinction risk; and
- 11. protective efforts that have not yet been fully implemented or demonstrated as effective (referring to the Services' Policy for Evaluation of Conservation Efforts When Making Listing Decisions ("PECE Policy"), 68 Fed. Reg. 15,100 (Mar. 28, 2003)).

82 Fed. Reg. at 38,673-74.

The sections that follow are organized based on each of these data requests. Our response specifically identifies sources of data and other information that have become available since ASMFC's 2012 stock assessment and NMFS' 2013 determination that listing the blueback herring or alewife as threatened or endangered was not warranted (78 Fed. Reg. 48,944) and that would be relevant to consider in any new review of the status of blueback herring and alewife. In addition to the discussion provided herein, a list of information sources not considered in the 2013 listing determination is provided in an Appendix to these comments.

## 1. Abundance of River Herring

Since ASMFC's 2012 stock assessment and NMFS' 2013 listing determination, several studies have been completed and published that provide significant new information on the abundance of blueback herring and alewife throughout their range and within specific portions of their range.

The most significant new source of information on the abundance of blueback herring and alewife is contained in the coast-wide and state-specific stock assessment updates (ASMFC 2017a, 2017b). The 2017 stock assessment update provides the following key information regarding the abundance of river herring:

- More River Trend Data is Available. Our knowledge of the trends of river herring runs has improved substantially: trend data are now available for 29 of the 38 rivers (76.3 percent) reviewed for trends in the 2012 benchmark survey. This is a substantial increase from the situation in 2012, when trend data were unknown for about 63 percent of the river systems examined. The additional river trend data show that overall river herring populations are increasing.
- **Bottom Trawl Survey Data is Now Available.** Trend data of river herring abundance in bottom trawl surveys conducted on the northeastern continental shelf is now available. In

the 2012 benchmark assessment, this trend was not available. The data show that river herring population trends are increasing.

- No Run Counts Have Decreased in the Last 10 Years. The 2017 reports concluded that no run counts reflected declining trends over the last 10 years.
- Over 86 Percent of Run Counts Either Have Increased or Show No Discernible Trend Over the Past Decade. Eleven of 29 (37.9 percent) show increasing trends, 14 of 29 (48.4 percent) show no trend, and the remaining 4 run counts have not been updated. Based on these data, 86.2 percent of the run counts that were evaluated either have no discernible trend or have increased over the past decade (ASMFC 2017a, 2017b).
- Over 96 Percent of the River Stocks Have Either Increased, Remained Stable, or Show No Discernible Trend. Of the 54 in-river stocks of blueback herring and alewife, 16 (29.6 percent) experienced increasing trends over the last 10 years, 8 (14.8 percent) were stable, 2 (3.7 percent) declined, 10 (18.5 percent) showed no trend, and the data were insufficient for the remaining 18 stocks (33.3 percent). Overall, the data available demonstrate that 24 of the 54 in-river stocks (44.4 percent) were either stable or increasing and that only 2 of these in-river stocks (3.7 percent) were decreasing (ASMFC 2017a, 2017b).

Overall, the data demonstrate a substantial status improvement since 2012. Although river herring levels remain depleted<sup>5</sup> across the Atlantic coast (ASFMC 2017a, 2017b, 2017c), their status has improved substantially since the benchmark stock assessment published in 2012, in which only 1 of 52 stocks (1.9 percent) were increasing, 22 of 52 (40.7 percent) were depleted, and data were insufficient to determine the trend for 28 of 52 (51.9 percent) stocks. That is, the evidence available in 2012 on 52 in-river stocks suggests that 92.6 percent of those stocks were either depleted or had insufficient data.

More importantly, the 2017 data suggest that the fishery management actions and habitat restoration activities taken to protect and recover river herring have been effective and have improved the species' status significantly. For a species with a life span ranging from 6 to 9 years (ASMFC 2017c), these improvements in status have occurred in less than the lifespan of a river herring hatched in 2012. This kind of improvement in status typically takes more than one generation to produce measurable changes in trend, so this improvement in such a short period of time suggests that the conservation efforts undertaken so far have been well tailored and remarkably effective. This dramatic improvement stands to reason: river herring were largely

<sup>&</sup>lt;sup>5</sup> As used here "depleted" means there was evidence for declines in abundance due to a number of factors, but the relative importance of these factors in reducing river herring stocks could not be determined. Combined factors such as intense historic fishing pressure, continued exploitation (both direct and incidental), ineffective fish passage resulting in the loss of riverine habitat, changing ocean conditions, and increased abundance of native and non-native predator species are likely responsible for depleted river herring stocks and continue to hinder recovery of the stocks (ASMFC 2017a).

depleted by commercial fishing pressure; that pressure was removed by fishery management actions implemented to protect river herring; and those actions were taken pursuant to existing fishery conservation laws that are specifically tailored to the recovery of commercial fisheries.

## 2. Productivity of River Herring

Since ASMFC's 2012 stock assessment and NMFS' 2013 listing determination, several studies have been completed or are in progress that provide data and other information on the productivity of blueback herring and alewife. These sources include the updated stock assessments completed by ASMFC (2017a, 2017b) and a master's thesis completed by Marjadi (2016).

The updated stock assessment indicates that three-year averages of observed total mortality (Z) values were above total mortality benchmarks recommended in the 2012 benchmark assessment for 12 of the 14 stocks (85.7 percent) with available data. This represents a small improvement: during the 2012 benchmark, three-year average total mortality values exceeded the 2012 benchmarks for all 18 of the stocks (100 percent) for which data were available (ASMFC 2017a, 2017c). If this trend continues or accelerates in the next status update (in 2022), it will indicate that existing efforts to conserve river herring are successful.

The master's thesis Marjadi completed in 2016, in collaboration with the Massachusetts Division of Marine Fisheries, provided information on the relationship between river herring body size, spawning time arrival, and sex influence on their reproductive success. This new information may be useful to NOAA for improving life history models for freshwater stages of these species.

## **3.** River Herring Distribution or Population Spatial Structure

Since ASMFC's 2012 stock assessment and NMFS' 2013 listing determination, several studies have provided new or additional data that can be used to refine NOAA's understanding of the population (stock) structure of blueback herring and alewife. New data are available on the genetic structure of specific geographic areas that show diversity, but do not provide support for efforts to identify distinct population segments of either species that might warrant listing.

Pess et al. (2014) present data on recolonization of streams by river herring and other anadromous fish, particularly after barriers to migration have been removed. This study would lead us to expect river herring to recolonize rivers and streams where dams have been removed (such as those discussed in Item 6.b, below) and increase the amount of spawning habitat available to them as a result. Rogers (2015) provides information on the population structure of both species in Albemarle Sound (North Carolina); the results of that study suggest that adult river herring have higher straying rates than previously expected, which would allow them to colonize (or recolonize) streams near their natal streams. Papers by Shepard and Block (2013) and Matlocks et al. (2017) also contain additional information that is relevant to the distribution and population structure of river herring.

Ogburn et al. (2017) collected genetic samples from adult river herring in five rivers in the upper Chesapeake Bay watershed to explore population structure for the species in the

watershed. Their results identify potential genetic differences between eastern shore and western shore tributaries, with possible temporal shifts in genetic structure due to straying.

## 4. Patterns of Phenotypic, Genotypic, and Life History Diversity

Since ASMFC's 2012 stock assessment and NMFS' 2013 listing determination, several studies have provided new or additional data on the phenotypic, genotypic, and life history diversity of blueback herring and alewife.

For example, several investigations examined the genetic structure of river herring populations (Hasselman et al. 2015, McBride et al. 2014 and 2015, Ogburn et al. 2017, Palkovacs et al. 2014). Turner and Limburg (2016) used otolith chemistry to examine nursery habitat selection by juvenile river herring in 20 rivers through the eastern U.S., while Russet et al. (2017) and Stormer and James (2017) examined temporal patterns of migration and spawning on river herring in 20 coastal lakes in Massachusetts and the Hudson River estuary, respectively. Eakin (2017) also studied in-river residence times and post-spawning migration timing of river herring in the Hudson River estuary.

Schlick (2016) contains data and other relevant information on the life history and population dynamics of river herring in tributaries of the Potomac River. Davis (2016) presents new information on the demography and trophic dynamics (interactions with predators and competitors) of blueback herring in the Connecticut River. Both studies provide information that was not available during the 2012 status review and that will help construct and evaluate life history and extinction probability models for river herring.

## 5. Habitat Conditions and Associated Limiting Factors and Threats

Since ASMFC's 2012 stock assessment and NMFS' 2013 listing determination, several studies have focused on relationships between river herring and their predators (Davis 2016, Smith et al. 2016, Schmitt et al. 2017). Berzins (2016) provides data on hydrologic conditions that are relevant to river herring spawning and outmigration in the South Edisto River.

Several new studies provide relevant information on river herring bycatch in fisheries (Bethany et al. 2013a, 2013b, 2014, 2017, Cournane et al. 2013, Hasselman et al. 2015, and McBride 2014). The information contained in these papers includes spatial and temporal patterns of that bycatch and identification of river herring stocks affected. In particular, data provided by Hasselman et al. (2015) suggest that mitigating bycatch on the southern New England fishing grounds may benefit recovery efforts for alewife and blueback herring genetic stocks that have experienced the greatest declines in spawning adult abundances.

# 6. Ongoing or Planned Efforts to Protect and Restore River Herring and Their Habitats

River herring face multiple threats from a variety of different sources, including overfishing, which was the primary cause of their decline in the 1970s, and other secondary sources, including inadequate fish passage at dams, declines in the area and quality of spawning habitat, predation, pollution, water withdrawals, ocean acidification, changing ocean conditions, bycatch in marine fisheries, and climate change. As a result, any coordinated program to protect,

restore, and conserve river herring has to address multiple factors including anthropogenic habitat alterations, predation by native and non-native predators, and unsustainable harvests in fisheries.

Since ASMFC's 2012 stock assessment and NMFS' 2013 listing determination, numerous management actions and restoration activities have been undertaken to address the primary threats to the blueback herring and alewife. There is substantial evidence that these efforts are countering the threats that caused the decline; are halting or reversing the decline; and appear likely to rebuild stocks of both blueback herring and alewife. The primary documents that guide these efforts are: (a) the River Herring Conservation Plan; (b) the Shad and River Herring FMP; and (c) NOAA's Habitat Blueprint. These have created a comprehensive and coordinated program to protect, restore, and conserve river herring and their habitat using existing regulatory authorities.

In August 2013, NOAA issued the River Herring Conservation Plan (<u>https://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/conserv/index.html</u>). Importantly, this plan is tantamount to a recovery plan that NMFS would be mandated to prepare to comply with the ESA (showing that little, if any, additional recovery planning benefit would be gained by an ESA listing). The plan is designed to achieve the following goals:

- identify key research needs for assessment and conservation;
- increase coordination of river herring research and conservation;
- identify funding sources for river herring research and conservation;
- identify conservation actions to address threats;
- cultivate research groups to address key topics;
- improve information to be used in the next assessment;
- improve information used in conservation efforts;
- further conservation efforts to address threats; and
- increase outreach about river herring.

As explained above, improvements in status of the species resulting from these actions typically take more than one generation to produce measurable changes in trend. Given that the river herring has a 6- to 9-year life span and that NMFS began implementing major fishery management actions and habitat restoration activities in 2013, it will likely be 2022 (or later) before NMFS can fully evaluate whether the conservation efforts undertaken so far have been effective (ASMFC 2017a).

### a. Fisheries Management

Atlantic Coastal Fisheries Cooperative Management Act – Amendment 2 to the Interstate Fishery Management Plan for American Shad and River Herring FMP provides the foundation for coordinated management of river herring fisheries.

Amendment 2 requires states to close their water to recreational and commercial river herring harvest, unless they have approved sustainable management in place. Beginning in 2005, states began enacting moratoria on river herring fisheries. As of January 1, 2012, states or jurisdictions without an approved sustainable fisheries management plan, as required under ASMFC Amendment 2 to the Shad and River Herring FMP, were closed. As a result, prohibitions on harvest (commercial or recreational) were extended to the following states: New Jersey, Delaware, Pennsylvania, Maryland, the District of Columbia, Virginia (for certain waters), Georgia, and Florida.

The New England and Mid-Atlantic Fishery Management Councils have adopted amendments to the Atlantic Herring Fishery Management Plan (Amendment 5) and to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan (Amendment 14) that should benefit river herring. Amendment 5 of the Herring FMP addresses river herring bycatch in the Atlantic herring fishery by increasing monitoring through increased observer coverage, closing areas for river herring protection, and by establishing caps on river herring catch. Amendment 14 establishes river management and avoidance areas for river herring, shad, and other species, which require 100 percent observer coverage, prohibit directed fishing in fisheries with high river herring bycatch, and establish caps on river herring and shad catch.

In addition, river herring co-occur with other species that are managed by the New England and Mid-Atlantic Fishery Management Councils and are likely to benefit from essential fish habitat designated under the Magnuson-Stevens Fishery Conservation and Management Act ("MSA") for other species in the northwest Atlantic. 78 Fed. Reg. at 48,964.

### b. Improvements in Fish Passage

In addition, numerous river restoration efforts that are beneficial for both species have been undertaken by the U.S. Fish and Wildlife Service ("USFWS") (*see* U.S. Fish and Wildlife Service 2013, 2015a, 2015b, 2015c, 2015d, 2016a, 2016b, 2017a, 2017b, 2017c, 2017d), State natural resource agencies, private entities, and NGOs throughout the species' range, including fish lift and handling facilities and dam removal projects. Some examples include:

- USFWS's 2013 restoration plan for the Old Southington Landfill Superfund Site in Southington, Connecticut, and the Solvents Recovery Service Superfund Site (also in Southington, Connecticut) includes phased removal of the Carpenters and the Clarks Brothers Dams to restore diadromous fish to the Quinnipiac River and would provide access to high quality spawning and nursery habitat for river herring in Grannis pond (USFWS 2013).
- In April 2014, a new fish lift and handling facility designed to pass alewives and blueback herring and American shad, as well as Atlantic salmon and sea lamprey, was

completed at Milford Dam. With effective passage at the Milford Dam fish lift, as well as a natural bypass set to open at the Howland Dam (about 40 river kilometers upstream of Milford Dam) in 2016, anadromous fish are expected to have access to 60 percent of their historical range.

- A study published in the journal *Marine and Coastal Fisheries* by Izzo et al. (2016) concluded that, after the removal of the Great Works and Veazie Dams, removing the Milford Dam eliminated the first barrier for upstream migrating anadromous fish on the main stem of the Penobscot River. Passage success at Milford Dam through a Denil fishway was relatively high prior to the Penobscot River Restoration Project (>80%; Holbrook et al. 2009), and delays were short compared with the other dams in the lower river (Shepard 1989; Holbrook et al. 2009).
- In 2014, a consortium consisting of NOAA, the Massachusetts Divisions of Marine Fisheries and Ecological Restoration, the Nature Conservancy, the Taunton River Wild and Scenic Stewardship Council, and the Middleboro-Lakeville Herring Commission, among others, began working to restore and recover the river herring core of the Taunton River, which supports one of the largest river herring runs in New England. As part of this effort, the agencies and organizations involved are employing the "life cycle conservation strategy" that NMFS adopted in its 2012 recovery plan for endangered Central California Coast coho salmon (NMFS 2012). Part of this effort involves removal of existing dams that have been constructed within the watershed, including projects to remove the Carver Cotton Gin and West Brittania Dams in the watershed (USFWS 2017a, 2017b).
- In the summer of 2016, the Great Dam and fish ladder on New Hampshire's Exeter River were removed, which provided complete river herring access to spawning and rearing habitat located above the dam (ASMFC 2017a).
- In September 2016, the Hughesville Dam was removed from the Musconetcong River in the Delaware River watershed of New Jersey. This was the last of five dams removed from the Musconetcong since 2008 by a river restoration program led by the Musconetcong Watershed Association, in cooperation with federal and state agencies, private entities, and non-profit organizations. (The Gruedyke Mill Dam was removed in 2008, the Seber Dam in 2009, and the Riegelsville and Finesville Dams in 2011.) The removal of the Hughesville Dam opened the last six miles of a 46-mile long river that rises out of Lake Hopatcong, between Sussex and Morris Counties.

A more extensive search of the gray literature appears likely to identify many similar efforts throughout the range of river herring.

## c. Habitat Protection and Restoration

NOAA's Habitat Blueprint is a key component of NOAA's River Herring Conservation Plan and has resulted in a suite of actions to protect and restore river herring habitat. For example, the Penobscot River in Maine and the Choptank River in Maryland were selected as Habitat Focus Areas under NOAA's Habitat Blueprint, targeting financial resources and technical assistance to support habitat conservation and restoration efforts in these high-priority watersheds including removing passage barriers and restoring unimpeded river herring passage and spawning and rearing habitats.

In addition, blueback herring and alewife co-occur with other species that have directed fisheries and are likely to benefit from essential fish habitat ("EFH") designated under MSA for other species in the northwest Atlantic (78 Fed. Reg. at 48,964). For example, some inshore river herring habitat in New England overlaps with EFH that has been designated for Atlantic salmon. Consultations and management recommendations to protect this EFH would benefit river herring as well.

River herring also occur in waters that have been included in critical habitat designations for species that include Atlantic salmon and Atlantic sturgeon. ESA section 7 consultations on activities in these fresh, coastal, and marine waters address potential adverse environmental effects of activities authorized, funded, or carried out by federal agencies; river herring that occur in these waters benefit from these actions as well.

### d. Protective CWA Actions

ASMFC's 2012 stock assessment and NMFS' 2013 listing determination did not appear to consider numerous management actions and restoration activities that address several of the threats to the blueback herring and alewife. For example, on December 29, 2010, the U.S. Environmental Protection Agency ("EPA") established a final Total Maximum Daily Load ("TMDL") for tidal segments of the Chesapeake Bay and its tidal tributaries and embayments that were deemed impaired for aquatic life uses due to nutrient loads (nitrogen and phosphorus) and sediment. The waters included in the TMDL had been listed on CWA section 303(d) lists of impaired waters in the States of Delaware, Maryland, Pennsylvania, and Virginia. The TMDL also allocated loadings of nitrogen, phosphorus, and sediment to sources contributing those pollutants in the seven States whose waters flow into the Bay: Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia. Further, EPA set limits for nitrogen, phosphorus, and sediment at 185.93, 12.54, and 6,435.61 million pounds per year, respectively, for the Bay. Finally, EPA committed to reduce air deposition of nitrogen to the tidal waters of the Chesapeake Bay to 15.7 million pounds per year. River herring that occur in the Chesapeake Bay watershed, which include the three populations Ogburn et al. (2017) identified, can be expected to benefit from improvements in water quality.

In addition, in 2014 EPA promulgated a rule for existing facilities that use cooling water intake structures to withdraw water from waters of the United States and have or require National Pollutant Discharge Elimination System ("NPDES") permits, 79 Fed. Reg. 48,300 (Aug. 15, 2014) ("Section 316(b) Rule"). The Section 316(b) Rule prescribes technology-based impingement reduction requirements and establishes a framework for determining the best technology available for minimizing adverse environmental impacts of entrainment. Although entrainment and impingement were not identified as significant threats to either species of river herring, the rule may make some incremental contribution to their recovery.

### 7. Adequacy, Implementation, and Effectiveness of Existing Regulatory Mechanisms

As discussed in Section III.6 above, blueback herring and alewife are subject to numerous existing federal (U.S. and Canadian), State and provincial, Tribal, and interjurisdictional laws, regulations, and agency activities designed to manage, protect, and restore river herring populations throughout their range. These authorities include the MSA, several provisions of the CWA (including sections 316(b) and 404), Coastal Zone Management Act, National Marine Sanctuaries Act, and state fishery management and habitat restoration authorities.

Specific protection and restoration activities have been outlined in the Shad and River Herring FMP, the River Herring Conservation Plan, and NOAA's Habitat Blueprint, which have regulated fisheries and promoted dam removal and river restoration projects. Activities identified in these plans are being implemented throughout the range of river herring using existing authorities, are addressing the primary threats to the two species of river herring, are reversing their decline, and appear likely to recover the species if they are given time.

The MSA effectively regulated river herring fisheries once the decline was documented. Moratoria have been enacted in Massachusetts (commercial and recreational in 2005), Rhode Island (commercial and recreational in 2006), Connecticut (commercial and recreational in 2002), Virginia (for waters flowing into North Carolina in 2007), and North Carolina (commercial and recreational in 2007, with the exception of a four-day open season in the Chowan River during the week of Easter).

As of January 1, 2012, States or jurisdictions without an approved sustainable fisheries management plan have closed fisheries for these species, as required under ASMFC Amendment 2 to the Shad and River Herring FMP. Specifically, this has resulted in prohibitions on commercial or recreational harvest in New Jersey, Delaware, Pennsylvania, Maryland, the District of Columbia, Virginia (for certain waters), Georgia, and Florida (ASMFC 2017a, 2017b).

## 8. Status and Trends of Identified Limiting Factors or Threats

Since ASMFC's 2012 stock assessment and NMFS' 2013 listing determination, several studies have been published that provide data and other information on environmental conditions that limit river herring populations (for example, Berzinis 2016), on the effects of bycatch (Bethoney et al. 2013a, 2013b, 2014, 2017; Hasselman 2015, McBride 2014), and the potential effects of predation. This new information reinforces or corroborates the information that was available to NOAA when it made its listing determination in 2013, and the information does not suggest the number, spatial extent, or intensity of the limiting factors or threats to river herring have increased.

## 9. Impacts of Environmental Variability and Climate Change on Survival, Recruitment, Distribution, and/or Extinction Risk

Since ASMFC's 2012 stock assessment and NMFS' 2013 listing determination, one important study has been published on the effect of environmental conditions on the relationship

between the abundance of spawning adults and recruitment of young-of-the-year river herring across the Atlantic coast (Tommasi et al. 2015). These authors examined a suite of environmental variables that include seasonal flow and temperature regimes and assessed the effect of spawner abundance and environmental variability on recruitment in five river systems (Androscoggin, Delaware, Potomac, Nanticoke, and Chowan Rivers).

### IV. Conclusion

As the information addressed above demonstrates, based on regulatory mechanisms now in place to protect and recover the species, coupled with signs of their overall improvement, the blueback herring and alewife do not warrant the protections of the ESA because the management actions and restoration activities taken pursuant to the Shad and River Herring FMP, the River Herring Conservation Plan, and NOAA's Habitat Blueprint are already addressing the primary threats to the species, have reversed their decline to the point that their status has substantially improved over the past five years, and appear likely to recover the species. The new information that has become available in the last four years confirms and further demonstrates that the protections of the ESA are not warranted for either species.

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