



*A Project of the*  
**National Coalition for Marine Conservation**

December 5, 2012

Dr. Chris Moore, Executive Director  
Mid-Atlantic Fishery Management Council  
Suite 201, 800 N. State St  
Dover, DE 19901

**Re: Scoping Comments on MSB 15**

Dear Dr. Moore,

The Wild Oceans Project of the National Coalition for Marine Conservation (NCMC) is dedicated to preserving the Northeast forage base, which is crucial to maintaining the structure and function of our ocean and coastal ecosystems and to the productivity of our marine fisheries. Anadromous herrings, river herring and shads, are essential components of this forage base as prey for a number of important commercial and recreational species in the Mid-Atlantic, including striped bass, bluefish and weakfish.<sup>i</sup> Equally as important to the region's ecology is the unique role anadromous herrings play in transferring nutrients from the ocean to coastal river systems.<sup>ii</sup> The ecological, social and economic impacts associated with depleted shad and river herring stocks are far-reaching and can only be mitigated through a holistic management framework that coordinates restoration efforts throughout their geographic range.

For this reason, we strongly support the Mid-Atlantic Council's efforts to incorporate river herring and shad species into the Atlantic Mackerel, Squid and Butterfish Fishery Management Plan (MSB FMP). Through Amendment 15 to that plan, state and federal fishery management authorities will gain a means to address critical gaps in current management, providing the tools, resources and opportunities necessary for recovery. **We are pleased to provide the Council with the following recommendations to assist with the amendment's development.**

**River Herring and Shads Require Federal Management**

The Amendment 15 scoping document appropriately references the Council's obligation under the Magnuson-Stevens Act (MSA) to prepare and submit to the Secretary of Commerce a fishery management plan for each fishery under its authority that requires conservation and management.<sup>iii</sup> A description of the MSB fisheries must include all the species of fish involved, including anadromous herrings.

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Without question, river herring and shad stocks are in need of conservation and management in federal waters. A recent peer-reviewed stock assessment for river herring concluded that populations of both alewives and blueback herring are depleted coastwide.<sup>iv</sup> Total mortality estimates exceed the peer review panel's recommended benchmark ( $Z_{40}$  with  $M=7$ ) in ALL systems examined by the stock assessment team.<sup>v</sup> Prior to the assessment, river herring had already been designated Species of Concern by the National Marine Fisheries Service (NMFS), and they are now under review for listing under the Endangered Species Act.<sup>vi</sup> American shad populations are not faring any better, with a peer-reviewed assessment finding that populations are at record lows and showing no consistent signs of recovery.<sup>vii</sup>

### **Gap Analysis**

An assessment of management gaps, both geographical and functional, should be undertaken by the Fishery Management Action Team (FMAT) to inform the development of alternatives that adequately complement the Interstate Fishery Management Plan for Shad and River Herring and effectively meet the requirements of the MSA to prevent overfishing. As described by Preston (2005), "(g)eographical gaps result from incomplete geographical coverage by fisheries management regimes. Functional gaps result from the lack of authority or capability in such a regime to carry out some key element in conservation, such as enforcement or data collection and analysis."<sup>viii</sup>

A critical gap in our understanding and accounting of alosine fishing mortality occurs in ocean waters, where management authority is shared by the states (out to three miles from the coast) and federal managers (3-200 miles off the coast in the Exclusive Economic Zone). Confusion and inconsistency in how ocean catch and discards of river herring are monitored and reported was identified as a problem in the recent ASMFC stock assessment and hinders an accurate estimate of ocean catch levels.<sup>ix</sup> Successful federal management planning should identify these and other weaknesses in the current management program and recommend corrective measures, including recommendations for areas under state or ASMFC authority to ensure consistency.

### **Management Program Recommendations**

Referring to the guidelines issued by the National Marine Fisheries Service for the creation of fishery management plans,<sup>x</sup> we offer the following recommendations for an appropriate fishery management program, including: a) problems for resolution; b) management objectives; c) management unit; d) habitat preservation, protection, and restoration; and d) management alternatives.

#### **Problems for Resolution:**

The Atlantic States Marine Fisheries Commission (ASMFC), through its Interstate Fishery Management Plan (IFMP) for Shad and River Herring, has been working to restore river herring and shad populations since 1985. Despite decades of coordinated state efforts through the IFMP, river herring populations have declined precipitously and American shad

populations, which initially looked to be rebounding in the 1990s, have also declined to historic lows.<sup>xi</sup> These declines are in spite of in-river restoration efforts over this same time period that include habitat planning, dam removals and installation of fish passage, and improvements to water quality.<sup>xii</sup> Clearly a paradigm shift for anadromous fish management is required – from a river-centric view of recovery to a more holistic view that takes into account the influences of the ocean environment - as we've done with salmon management on the West Coast. Federal salmon management plans recognize that at-sea bycatch and oceanographic conditions have a significant bearing on salmon survival and have implemented monitoring programs to assess these influences, including the development of ecosystem indicators to predict salmon survival at sea.<sup>xiii</sup>

In terms of satisfying the immediate need to accurately account for and minimize incidental catch of alosine, the present fragmented management approach for federal waters, pieced together by two separate councils under two separate FMPs, will ultimately fall short. For example, final alternatives selected for the New England Council's Amendment 5 to its Atlantic Herring FMP failed to include a catch cap measure to complement the catch cap adopted in Amendment 14, despite significant overlap in the mid-water trawl fisheries for sea herring and mackerel.<sup>1</sup> Even in the event that the New England Council does establish a cap in the future, the two councils would not be compelled to implement the same cap. Nor would either be required to select a cap that will prevent overfishing. In addition, while Amendment 14 takes both shad and river herring species into consideration, Amendment 5 does not consider the needs of or fishing impacts on shad populations.

Addressing incidental catch indirectly within MSB fisheries is only the first piece of a larger puzzle that needs to be assembled in order to adequately protect these fish throughout their life cycles and throughout their range, especially in ocean waters where they spend most of their lives. Without the region-wide and fleet-wide consistency in monitoring and management measures that federal management enables, the conservation burden will be placed on a subset of fisheries contributing to the problem, and the overall conservation benefit to river herring and shad will be diminished.

Federal management would require catch levels that prevent overfishing and contribute to rebuilding, consistent with the ASMFC definition of a sustainable fishery.<sup>xiv</sup> Federal management also would require that all catch be accounted for and kept at sustainable levels and that limits on catch be set through the Council's Scientific and Statistical Committee (SSC) process as established by the ACL/AM Omnibus Amendment. Other problems that should be addressed through federal management are summarized in the below table. (*Note: This table was originally submitted in our Amendment 14 DEIS comments.*)

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<sup>1</sup> The mid-water trawl fishery for Atlantic herring and Atlantic mackerel - managed by two councils under two separate federal FMPs - accounts for 71% of combined river herring and shad incidental catch. Likewise, fleet overlap exists between New England and the Mid-Atlantic small-mesh bottom trawl fisheries, which are responsible for an estimated 24% of the combined incidental catch. (Amendment 14 DEIS, Appendix 2, Table 3, p. 581).

ISSUE	Problem	Benefit of Federal Stock Designation
<b>COUNCIL AUTHORITY LIMITED TO ITS MANAGED FISHERIES</b>	Actions the Mid-Atlantic Council can take to manage river herring and shad incidental catch are limited to its own fisheries, likely resulting in a disproportionate distribution of the conservation burden and/or ineffective management measures.	The tools available to the Council to manage and conserve river herring and shad would expand beyond its managed fisheries, allowing for conservation and management to be applied consistently throughout federally-managed fisheries that contribute to the problem.
<b>MINIMIZING INCIDENTAL CATCH</b>	The Magnuson Act narrowly defines bycatch as discards. Because most river herring and shad caught in federal fisheries are retained for sale, regulatory authority to reduce bycatch under National Standard 9 does not afford these species adequate protection.	Federal stock designation would require that all catch is accounted for and maintained at sustainable levels.
<b>EFH IMPACT CONSULTATION</b>	Federal councils cannot designate essential fish habitat (EFH) for river herring or shad unless they are included in a federal FMP.	EFH designation would ensure federal agency consultation with NOAA on projects that could impact these important river herring and shad habitats.
<b>STOCK ASSESSMENT RESOURCES</b>	State resources for stock assessment are extremely limited resulting in infrequent stock assessments. Stock assessments that are decades old are not useful for management purposes.	NMFS could allocate resources to aid with the stock assessment, including participation of the Northeast Fisheries Science Center. Assessment needs would likely dictate that river herring and shad be given higher priority in NMFS data collection programs (e.g., recording lengths and weights from trawl surveys, collecting otoliths for aging, genetic studies).
<b>FEDERAL CATCH REPORTING</b>	There is no standard methodology for documenting catch of river herring and shad in federal waters.	Catch reporting methodology to account for mortality on an annual basis would be implemented.
<b>INCORPORATING NEW INFORMATION</b>	There is currently no framework for regularly incorporating new information about river herring and shad populations and fisheries into federal management actions.	The status of river herring and shad fisheries and stocks would be reviewed annually in conjunction with catch specifications for mackerel, squid, and butterfish. All significant sources of mortality would be identified and accounted for.

**Management Objectives:**

The primary objective of Amendment 15 should be to establish a federal management framework for river herring and shad that satisfies the requirements of the MSA, is responsive and adaptive to conservation and management needs in federal waters, and facilitates cooperation between state and federal management authorities in order to successfully rebuild these species to levels where they can fulfill their ecological role while supporting thriving in-river fisheries.

In addition, an objective similar to that of the one established through Amendment 1 to the ASMFC IFMP should be adopted to “keep fishing mortality sufficiently low to ensure survival and enhancement of depressed stocks and maintenance of stabilized stocks.” Of paramount importance in meeting this objective will be minimizing incidental catch to the maximum extent possible.

Finally, Amendment 15 objectives should recognize the ecological importance of these non-target species in “maintaining adequate forage for all components of the ecosystem,”

as the revised National Standard 1 (NS1) Guidelines require.<sup>xv</sup> This goal of maintaining adequate forage for predators and the ecosystem should be incorporated as an objective in the MSB FMP, which currently does not include any objective relative to protecting the ecological role of target species (i.e., squid, mackerel and butterfish) and non-target species (i.e., river herring and shads) as forage.

### **Management Framework Options:**

The Amendment 15 scoping document provides a number of examples for management frameworks that formally link state and federal management actions; however, the unique life cycle and challenges associated with alosine management require a new model. Attention to the individual needs of river systems and river-specific populations must not be lost. The federal plan must complement rather than supersede the ASMFC plan with the authority remaining with the ASMFC to determine in-river catch levels in accordance with the IFMP sustainability and monitoring criteria. A federal management plan should support rather than attempt to replace current states' efforts to conserve and build shad and river herring populations.

We offer two possible approaches for federal management planning:

- 1. Incorporate the IFMP species (alewife, blueback herring, American shad and hickory shad) into the MSB FMP as non-target stocks in these fisheries.** Given the geographic range of river herring and shad along the eastern seaboard, it makes sense for the Mid-Atlantic Council to take the lead in federal management, as the Mid-Atlantic Council is uniquely positioned to collaborate with both the New England and South Atlantic Councils and already meets regularly with the ASMFC for a number of jointly managed species (e.g., bluefish, summer flounder, black sea bass).
- 2. Develop a joint fishery management plan with the New England Council for Atlantic herring and Atlantic mackerel, incorporating the IFMP species into this plan as non-target stocks.** Because of their significant overlap, managing herring and mackerel fisheries under two separate plans results in costly administrative duplicity, inconsistency and confusion regarding regulations and enforcement, and weakening of shad and river herring incidental catch reduction strategies (e.g., cap measure exists in the MSB plan but not in Herring FMP). Incorporating river herring and shad within a single FMP for herring and mackerel would improve efficiency and consistency and set the stage for managing the Northeast forage base more holistically, allowing for more explicit consideration of the ecological connections within the forage base.

For both of the above approaches, formal processes for ASMFC and Council coordination would need to be established, and the Council's FMP committee and advisory panel membership would need to be evaluated to ensure adequate representation of shad and river herring interests. Annual specification meetings, held jointly with representatives from the ASMFC Shad & River Herring Management Board, would be necessary to review

recent information and set appropriate catch levels for the upcoming fishing year. Revised specification procedures should encompass the entire specification process, including the SSC meeting to determine ABC/OFL, for which expertise from the ASMFC staff and technical committee membership would be of value.

Because river herring and shad species are clearly “in” the MSB and Atlantic herring fisheries and are therefore required to be managed as stocks in these fisheries, we do not support a separate NMFS-administered FMP for these stocks. Imposing another layer of management in need of coordination with the two councils would decrease rather than improve conservation and management efficiency and it would not provide the same stakeholder accessibility and transparency standards as Council-administered plans.

### **Management Unit:**

A river herring stock structure working group, convened by NMFS in response to the ESA petition, concluded that there is compelling evidence for regional stock structure but not at a river-specific level.<sup>xvi</sup> Though the group was unable to ascertain stock mixing patterns at sea, it agreed that the species’ ocean phase should be considered as a mixed stock.<sup>xvii</sup> Similarly, the 2007 ASMFC American shad assessment summarized tagging study results indicating that American shad stocks mix at sea.<sup>xviii</sup> Until genetic markers, tags or other tools are employed to differentiate at-sea mixing patterns and mixed catch composition, federal managers should consider the mixed ocean stock of each species as a single management unit.

### **EFH Designation, Preservation, Protection and Restoration:**

Designating Essential Fish Habitat (EFH), defined as “those waters and substrate necessary to fish for spawning, breeding feeding or growth to maturity,”<sup>xix</sup> for each stage in the life cycle of river herring and shad, would result in a number of benefits. First and foremost, EFH designation would greatly expand the geographic boundaries where mandatory consultations would be required on any federal agency action that may adversely impact the EFH. Consultations would require the preparation of EFH assessments, analyzing the potential adverse effects of the action on EFH **and the managed species**. While there are likely areas of habitat overlap with current federally-managed species, federal management would require explicit consideration of the impacts to river herring and shad, not just their habitat, when determining the nature and extent of impacts and necessary mitigation measures.

In addition, EFH guidelines describe the loss of prey “through direct harm or capture, or through adverse impacts to the prey species’ habitat” as an adverse effect on EFH.<sup>xx</sup> These effects may result from fishing and non-fishing activities. Because they serve as an important food source for a number of federally-managed species, EFH should be reviewed with an ecosystem-based approach, with more explicit consideration of how depletion of river herring and shad adversely impacts EFH for dependent predators. Amendment 15 analyses should review current EFH descriptions for dependent predators, highlighting

areas of significant overlap with river herring distribution and making recommendations for necessary EFH modifications in other FMPs so that fishing impacts to these areas can be appropriately analyzed and minimized.

## **Management Alternatives:**

### ***Stock Determination Criteria***

The plight of the Atlantic coast's alosines has drawn the attention of the scientific community and has generated a rich body of research in recent years, much of it focused on how to assess coastwide populations and the impact of ocean bycatch. For example, the 2012 river herring assessment included a depletion-based stock reduction analysis (DB-SRA), which although not yet fully developed for management purposes, was highlighted for further development in the recommendations of the peer review team.<sup>xxi</sup> Similarly, Dr. Tom Miller constructed an example of how a Stochastic SRA model could be developed for American shad, emphasizing the utility of the model for providing MSY-based reference points.<sup>xxii</sup> Swept area biomass indices were employed by scientists at the Northeast Fisheries Science Center for constructing MSB Amendment 14 and the DEIS<sup>xxiii</sup> and also were used in the recent river herring assessment to ascertain trends in coastwide abundance.<sup>xxiv</sup> Scientists at the University of New Hampshire are also using swept area biomass modeling, incorporating Canadian data, to develop minimum estimates of river herring biomass in the ocean.<sup>xxv</sup> Finally, the necessity to determine extinction risk for river herring populations as a consequence of the ESA petition resulted in the recommendation to develop a Multivariate Auto-Regressive State Space (MARSS) model, which will provide additional insights into the status of river herring populations.<sup>xxvi</sup>

In spite of all these efforts underway, some may contend that alosines should not be federally managed because we do not yet have an assessment that delivers neatly packaged coastwide reference points. We point out that more has been done with less information in the management of our federal fisheries. The majority of federal fish stocks are managed with inadequate or no stock assessments. Still the regional councils, in collaboration with their SSCs and regional science centers, have developed methods to meet the criteria of the MSA and the National Standard 1 (NS1) Guidelines.

### ***Overfishing Limits (OFL) and Acceptable Biological Catch (ABC)***

Assessments that do not provide biological reference points are deemed Level 4 according to the Mid-Atlantic Council's ACL/AM Omnibus Amendment and this category would include river herring and shad species. The Council's treatment of current Level 4 stocks, Atlantic mackerel and butterfish, provides clear examples of how stocks can be managed to satisfy the MSA and NS1 ACL requirements without the benefit of assessment-determined reference points. The Atlantic mackerel ABC is based on average Canadian and U.S. catch levels because the most recent stock assessment did not provide overfishing or overfished reference points.<sup>xxvii</sup> An OFL for mackerel could not be determined. Even though the most recent butterfish assessment did not provide biological reference points

for management use, the butterfish ABC was recently increased because of an “envelope” analysis of NMFS trawl survey data and catch data that determined a likely range of stock size and fishing mortality rates.<sup>xxviii</sup> Drawing from these examples, index-based assessment modeling, and methods for determining OFLs and ABCs for stocks for which we only have reliable catch data<sup>xxix</sup> should be explored and included within Amendment 15 as a suite of alternatives for deriving OFLs and ABCs for the coastwide populations of river herring and shad species.

### ***Role of the States in Meeting NS1 ACL/AM Requirements***

Of primary concern in the development and implementation of ACLs and AMs is the role and authority of the ASMFC in meeting the federal requirements to prevent overfishing. The National Standard 1 Guidelines contemplate and provide for the unique management challenges associated with state/federal co-management of species.

*“...NMFS recognizes that Federal management is limited to the portion of the fishery under Federal authority ... When stocks are co-managed by Federal, state, tribal, and/or territorial fishery managers, the goal should be to develop collaborative conservation and management strategies, and scientific capacity to support such strategies ...to prevent overfishing of shared stocks and ensure their sustainability.”<sup>xxx</sup>*

While State ACLs and AMs may be desirable in many cases to achieve conservation and management goals for shared fishery resources, they are not required. Alternative collaborative approaches for preventing overfishing can and should be explored. We recommend the development of an alternative set that includes the following scenarios.

- **ACL for federal waters only.** To prevent overfishing and adequately safeguard the stocks, the ACL should be determined in collaboration with the ASMFC, with the ASMFC providing predictions for in-river landings for the specification period. The ASMFC should also provide updated results from the IFMP’s monitoring program, including performance of shad and river herring runs in relation to restoration goals and the Z<sub>40</sub> benchmark. This approach relies on the IFMP to prevent overfishing in state waters, and an analysis should be undertaken to ensure this is the case. (See recommendations under “Gap Analysis” above.)
- **Overarching ACL subdivided into state and federal sub-ACLs, with the ASMFC delegated the authority to determine the state sub-ACL and how it would be administered.** Subdividing an ACL into state and federal portions is the preferred approach described under NS1 Guidelines. A danger inherent in selecting one overall number to prevent overfishing is that attention to the individual needs of river-specific populations may be lost. ASMFC, through the IFMP, requires robust monitoring and sustainable fishery criteria and is better positioned to determine appropriate catch levels for state fisheries. An overarching ACL that would prevent overfishing could be determined through coastwide modeling or through recent catch records.

- **ACLs for Individual Species and/or Stock Complexes.** While species-specific ACLs are preferred, the NS1 guidelines allow for ACLs to be determined for a stock complex as a whole “where stocks in a multispecies fishery cannot be targeted independent of one another and MSY can not be defined on a stock-by-stock basis...; where there is insufficient data to measure their status relative to SDC; or when it is not feasible for fishermen to distinguish individual stocks among their catch.”<sup>xxxix</sup> Given the challenges associated with alosine identification in the juvenile stages most often captured and the co-occurrence of river herring and shad in observer data,<sup>xxxix</sup> managing this group as a single complex may be warranted. In addition, aggregating the stocks in this manner may improve the precision of catch estimates.

### ***Accountability Measures (AMs)***

As described in the NS1 Guidelines, “(f)or stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments must, at a minimum, have AMs for the portion of the fishery under Federal authority.” AM alternatives should explore the closure of the EEZ when a pre-determined percentage of the ACL is reached. The percentage should be based on an assessment of management uncertainty determined through specifications, consistent with other Council-managed species. If overages occur, the amount of the overage should be deducted from the ACL for the subsequent fishing year. Rollover of underages should not be permitted given the depleted condition of these species.

### ***Management Measures***

A full suite of management measures should be analyzed in Amendment 15 in order to meet the recommended objectives described above. These should include:

- **Explicit prohibition on directed fishing of any alosine in the EEZ;**
- **Determination of a threshold level of incidental catch, above which a federally-issued permit would be required to possess, harvest or land any alosine;**

*This would give the council needed authority to oversee and control alosine catch in other federal-managed fisheries so that the conservation burden is not born solely by the mackerel, squid and butterfish fisheries.*

- **Time/area closures in identified hotspot areas;**

*We believe, based on the Amendment 5 analyses,<sup>xxxix</sup> there would be a conservation benefit to both river herring and shad if the River Herring Protection Areas identified through Amendment 5 were implemented. Though they are driven by water temperature, like other small pelagic species, river herring and shad congregate where food is available. Static or slowly changing ocean features such as topography can significantly influence productivity which in turn influences the location of feeding grounds. While explored through Amendment 14, finer scale temporal and spatial analysis to identify potential time/area closures is warranted.*

- **Reduction of the mackerel incidental catch limit in order to be consistent with the Atlantic herring plan and remain under the ACL.**

*The overlap of Atlantic herring and Atlantic mackerel mid-water trawl fisheries complicates implementation of an ACL in the MSB fisheries, since Atlantic herring fishing may continue in the same quarter and in the same areas allowing catch of river herring and shad to continue. The current mackerel incidental allowance of 20,000 lbs is far too liberal for deterring directed fishing and minimizing fishing effort should a cap be reached. In comparison, the 2,000 lbs incidental Atlantic herring limit, implemented after a herring management area closes, has proven effective. For example, when Atlantic herring Area 2 closed on February 20th of this year, mackerel fishing that takes place in the same area leveled off.<sup>xxxiv</sup>*

### **Related Council Actions and Programs**

Related actions and programs being developed concurrently with Amendment 15 should be taken into consideration as Amendment 15 moves forward. These activities include:

- **The Standard Bycatch Reporting Methodology Amendment (SBRM)**

River herring and shad species groups should be included in the new SBRM for analysis, with the goal of fully integrating them into bycatch reporting and observer prioritization standards without delay when Amendment 15 is completed.

- **The Ecosystem-based Management Guidance Document**

The council is moving toward an ecosystem-based approach to managing its fisheries, including special attention to those species that provide forage for the ecosystem. The basic elements of this ecosystem-based approach, as laid out by the NMFS Ecosystems Principles Advisory Panel, include planning that considers the geographic range of the ecosystem and its component species; describes the habitat needs of the “significant food web;” accounts for total removals, including incidental mortality; provides for long-term monitoring; and, last but not least, assesses “the ecological, human and institutional elements of the ecosystem which most significantly affect fisheries and are outside (management) authority. Included should be a strategy to address those influences in order to achieve (plan) objectives.”<sup>xxxv</sup> Amendment 15, including shad and river herring as stocks in the fishery, would address each of these elements and provide a process for expanding the institutional ecosystem to better conserve and manage the species within it. In addition, as the Ecosystem-based Fisheries Management Working Group moves forward with the creation of the guidance document, consideration should be given to appropriate indicators to include in the “State of the Ecosystem” report for informing conservation and management decisions. For shad and river herring, useful indicators would include ocean climate conditions that influence survivability and the status of the forage base as a whole.

- **Research Planning**

In addition to the need for robust incidental catch monitoring and reporting, the river herring and shad assessments contain a number of research needs for improving upon future assessments and management strategies. A number of high priority needs would benefit from support of the Council and the Northeast Fisheries Science Center (NEFSC), including:

- Analyzing the relationship between interactions in the offshore bycatch fishery and population trends in the rivers;
- Genetic analyses to determine population stock structure along the coast and enable determination of river origin of incidental catch in non-targeted ocean fisheries;
- Determining and quantifying stocks impacted by mixed stock fisheries using otolith microchemistry, oxytetracycline otolith marking, genetic analysis, and/or tagging; and
- Assessing ageing techniques and conducting ageing workshops to maintain consistency and accuracy.

In collaboration with the ASMFC, a review and prioritization of research needs should be undertaken in order to incorporate these needs into NEFSC and MAFMC research plans.

Though difficult to quantify, the ecological, social and economic benefits of restored river and shad populations to the Nation would be significant. Amendment 15 promises to deliver a new cooperative model for successfully tackling the unique challenges of anadromous fisheries management. We are grateful for the opportunity to provide recommendations and look forward to our continued work together on this issue.

Sincerely,



Pam Lyons Gromen  
Executive Director

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<sup>i</sup> See predator data for American shad, alewife and blueback herring available at <http://fishbase.org>.

<sup>ii</sup> Durbin, A. G., S. W. Nixon, and C. A. Oviatt. 1979. Effects of the spawning migration of the alewife, *Alosa pseudoharengus*, on freshwater ecosystems. *Ecology* 60(1):8-17.

<sup>iii</sup> 16 U.S.C. §§ 1853(a)(2); 1852(h)(1). See also *Flaherty v. Bryson*, 2012 WL 752323 (D.D.C. Mar. 9, 2012).

<sup>iv</sup> ASMFC. May 2012. Stock Assessment Report No. 12-02 of the Atlantic States Marine Fisheries Commission: River Herring Benchmark Stock Assessment, Volume 1.

<sup>v</sup> *Ibid*, p. 25.

<sup>vi</sup> Natural Resources Defense Council. Before the Secretary of Commerce: Petition to List Alewife (*Alosa pseudoharengus*) and Blueback Herring (*Alosa aestivalis*) as Threatened Species and to Designate Critical Habitat. 01 Aug 2011.

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- <sup>vii</sup> ASMFC American Shad Stock Assessment Peer Review Panel. Stock Assessment Report No. 07-01 of the Atlantic States Marine Fisheries Commission, Terms of Reference & Advisory Report to the American Shad Stock Assessment Peer Review. Conducted on July 16-20, 2007, Alexandria, Virginia.
- <sup>viii</sup> Preston, G.L. 2005. Review of fisheries management issues and regimes in the Pacific Islands Region / G.L. Preston. – Apia, Samoa : South Pacific Regional Environment Programme, IWP-Pacific Technical Report (International Waters Project) no. 17.
- <sup>ix</sup> See note iv, p. 26.
- <sup>x</sup> NMFS. Operational Guidelines Fishery Management Plan Process. (Revised 1997). [http://www.nmfs.noaa.gov/sfa/domes\\_fish/OperationalGuidelines/OperationalGuide.htm](http://www.nmfs.noaa.gov/sfa/domes_fish/OperationalGuidelines/OperationalGuide.htm).
- <sup>xi</sup> ASMFC. August 2007. Stock Assessment Report No. 07-01 (Supplement) of the Atlantic States Marine Fisheries Commission: American Shad Stock Assessment for Peer Review, Volume 1, p. 153.
- <sup>xii</sup> Miller, Larry. “U.S. Fish and Wildlife Service Shad and River Herring Restoration.” PowerPoint presentation. MAFMC Meeting, Philadelphia, PA. 06 Oct 2010.
- <sup>xiii</sup> Peterson, W. T., C. A. Morgan, E. Casillas, J. L. Fisher, and J. W. Ferguson. 2010. Ocean Ecosystem Indicators of Salmon Marine Survival in the Northern California Current. [http://www.nwfsc.noaa.gov/research/divisions/fed/oeip/documents/peterson\\_etal\\_2010.pdf](http://www.nwfsc.noaa.gov/research/divisions/fed/oeip/documents/peterson_etal_2010.pdf)
- <sup>xiv</sup> The ASMFC defines sustainable fisheries as “those (states) that demonstrate their... stock could support a commercial and/or recreational fishery that will not diminish potential future stock reproduction and recruitment.” (ASMFC. Amendment 2 to the Interstate Fishery Management Plan for Shad and River Herring. May 2009.)
- <sup>xv</sup> 50 CFR § 600.310(e)(3)(iii)(c).
- <sup>xvi</sup> NMFS. 2012. River Herring Stock Structure Working Group Report. Report to the National Marine Fisheries Service, Northeast Regional Office. August 13, 2012, 60pp.
- <sup>xvii</sup> Ibid
- <sup>xviii</sup> ASMFC. August 2007. Stock Assessment Report No. 07-01 (Supplement) of the Atlantic States Marine Fisheries Commission: American Shad Stock Assessment for Peer Review, Volume 1, pp. 155-158.
- <sup>xix</sup> 16 U.S.C. § 1802 (10).
- <sup>xx</sup> 50 CFR § 600.815 (a)(7)
- <sup>xxi</sup> See note iv, p. 15
- <sup>xxii</sup> Miller, T.J. 2010. Estimating Bycatch Limits for American Shad and River Herring In the Northwest Atlantic. Report Prepared for MRAG Americas. [http://www.mafmc.org/fmp/msb\\_files/Miller\\_ByCatch\\_Estimation\\_Final.pdf](http://www.mafmc.org/fmp/msb_files/Miller_ByCatch_Estimation_Final.pdf).
- <sup>xxiii</sup> MAFMC. April 2012. Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) Fishery Management Plan Draft Environmental Impact Statement, Appendix 1.
- <sup>xxiv</sup> See note iv, pp.62-64.
- <sup>xxv</sup> J. Courneau, Research Scientist at the University of New Hampshire, personal communication, December 3, 2012
- <sup>xxvi</sup> NMFS. 2012. River Herring Extinction Risk Analysis Working Group Report. Report to the National Marine Fisheries Service, Northeast Regional Office. August 13, 2012. 40 pp.
- <sup>xxvii</sup> MAFMC. June 2012 Meeting Materials. [http://www.mafmc.org/meeting\\_materials/2012/June%202012/Tab%2003\\_Mackerel\\_Squid\\_Butterfish\\_2013\\_Specs.pdf](http://www.mafmc.org/meeting_materials/2012/June%202012/Tab%2003_Mackerel_Squid_Butterfish_2013_Specs.pdf)
- <sup>xxviii</sup> Ibid
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- <sup>xxxi</sup> 50 CFR § 600.310 (g)(5)
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- <sup>xxxiii</sup> See Draft Amendment 5 to the Fishery Management Plan for Atlantic Herring, Volume II, Appendices.
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