



Mid-Atlantic Fishery Management Council

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MEMORANDUM

Date: September 30, 2013
To: Mackerel, Squid, and Butterfish (MSB) Committee/Council
From: Jason Didden *JDD*
Subject: River Herring/Shad Management / Am 15

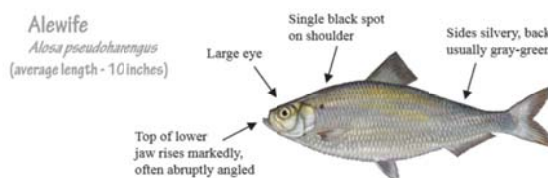
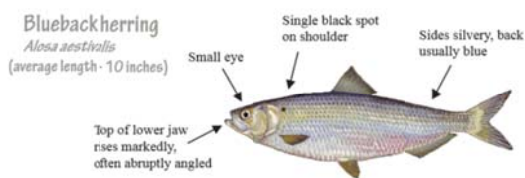
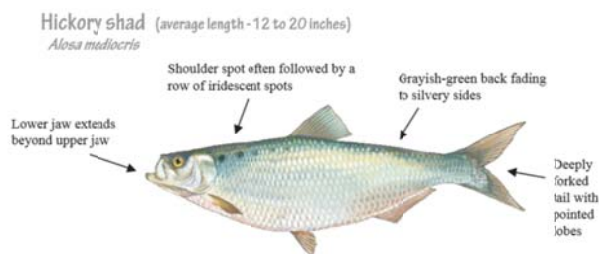
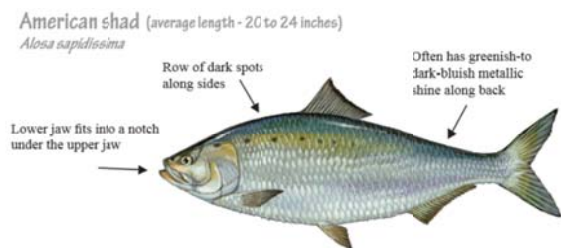
In this tab please find the following items:

1. The staff white paper that considers whether additional management by the Council via a fishery management plan is required and/or appropriate for river herrings and shads.
2. Public comments on this topic. While there was no official public comment period, the Council received substantial public comment on the river herring/shad issue. In instances where identical comments were received from many individuals, an exemplar and the number of comments is provided. Lists of names will be posted to the Council Website.

Staff is also drafting a short options document on possible approaches regarding currently un-managed forage fish (an Amendment 15 scoping comment issue). This options document will be forwarded to the Council as soon as possible.

RIVER HERRING AND SHAD - POTENTIAL MANAGEMENT BY THE MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

Staff White Paper
Jason Didden, Mid-Atlantic Fishery Management Council



Fish illustrations: Duane Raver/U.S. Fish and Wildlife Service, Source:
http://www.ncwildlife.org/Portals/0/Fishing/documents/Herring_Shad_ID_guide_sm.pdf



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1.2 NOTES ON STRUCTURE AND WORDING CONVENTIONS

Structure

This document first describes the context of the decision for the Council, some potential routes forward, and relevant background information. Then the question of whether river herrings and shads require additional Council management and conservation via a fishery management plan (FMP) is considered via the framework described by the National Marine Fisheries Service (NMFS) in the National Standard 7 guidelines. The question is also considered relative to National Standard 3.

This document is a Council staff product. It was reviewed by the Amendment 15 Fishery Management Action Team (FMAT) and their edits have been incorporated into the document.

Wording Conventions

In this document, "catch" refers to all fish caught in a fishery (whether targeted or not and whether retained or discarded). Targeted fish are those intended to be caught. Non-target species are those caught but not targeted. Bycatch usually refers to discards but is a term often used in fishery management to refer to several different things and so it is not used in this document except where unavoidable (for example a statute, report title, program name, etc.). Instead, fish caught and then discarded at sea are called "discards." Landings are fish caught and retained. Fish that are not targeted but are landed are called "incidentally landed catch."

In this document, "river herrings" include blueback herring and alewife. "Shads" include American shad and hickory shad.

The Magnuson-Stevens Fishery Conservation and Management Act is the primary law governing marine fisheries management in United States federal waters. The Act was first enacted in 1976 and amended in 1996 and in 2006. In this document, "Magnuson-Stevens Act" refers to the Magnuson-Stevens Fishery Conservation and Management Act as currently amended.

The term "mortality cap" refers to a management system whereby directed fishing for one species may be stopped or limited when catch of some other species reaches a pre-set limit. Similar terms include bycatch caps or discard caps, but these would only apply to discarded fish, while a mortality cap would track all catch (retained or discarded).

List of Acronyms, Abbreviations, etc.

ABC	– Acceptable Biological Catch
ACL	– Annual Catch Limit
ACFCMA	– Atlantic Coastal Fisheries Cooperative Management Act
AM	– Accountability Measure
ASMFC	– Atlantic States Marine Fisheries Commission
Commission	– Atlantic States Marine Fisheries Commission
Corps	– U.S. Army Corps of Engineers
Council	– Mid-Atlantic Fishery Management Council
EA	– Environmental Assessment
EFH	– Essential Fish Habitat
FERC	– Federal Energy and Regulatory Commission
FMP	– Fishery Management Plan
Lb.	– pounds
Kg	– kilograms
MAFMC	– Mid-Atlantic Fishery Management Council
MT	– Metric Ton (~2204.6 pounds)
Nm	– Nautical Mile
NEFMC	– New England Fishery Management Council
NMFS	– National Marine Fisheries Service (also known as NOAA Fisheries)
NOAA	– National Oceanic and Atmospheric Administration
U.S.	– United States
U.S.C.	– United States Code

2.0 INTRODUCTION

The Mid-Atlantic Fishery Management Council (Council) is considering whether it is required and/or appropriate for river herrings and shads (which are all anadromous) to be species that are directly managed by a Council FMP. From a legal and decisional perspective it makes little difference if any river herring and/or shad species would be managed in a separate FMP or within the Mackerel, Squid, and Butterfish FMP, so no distinction is made in this document. Consideration of river herring and shad management began several years ago during development of Amendment 14 to the Mackerel, Squid, and Butterfish FMP. This topic was removed from Amendment 14 so that it could be considered separately given the variety of issues that needed to be addressed per the Magnuson-Stevens Act and per the National Standard Guidelines developed by the National Marine Fisheries Service (NMFS). The rest of this section will outline several potential routes forward as well as the applicable NMFS's guidelines that assist Councils in carrying out their responsibilities under the Magnuson-Stevens Act.

Potential Routes

If there was currently no management of river herrings and shads by any entity the need for additional management would be clear. At the other extreme, if existing management was known to be sufficient to conserve river herrings and shads then an FMP would not be required. Since the existing management framework for these species consists of A) measures that have been in place for quite some time, B) measures that have been recently implemented, and C) measures that are likely soon to be implemented, it is difficult to determine if additional conservation and management via a Council FMP is required. The following table summarizes several potential routes of future management.

Table 1. Potential Management Routes.

Management Route	Likely River Herring and Shad Impacts Beyond Current Management	Likely Costs (resources required)
a. FMP via MAFMC lead (complementary with the Commission and possibly joint with other Councils)	Positive (higher), but to unknown degree because there are many stressors, most of which are beyond the immediate control of the Council	Highest
b. FMP via NEFMC/other lead (MAFMC would support)	Positive (higher), but to unknown degree because there are many stressors, most of which are beyond the immediate control of the Council	Highest, but on other Council
c. Incremental Council involvement as opportunities present themselves via ongoing interagency coordination	Positive (higher), but to unknown degree because there are many stressors, most of which are beyond the immediate control of the Council	Lowest
d. Council focuses on catch caps and encourages Commission to pursue complementary management through NMFS (like striped bass) if additional measures are needed in federal waters	Positive (higher), but to unknown degree because there are many stressors, most of which are beyond the immediate control of the Council	Medium (mostly on Commission and NMFS)

FMP = Fishery Management Plan; MAFMC = Mid-Atlantic Fishery Management Plan; NEFMC = New England Fishery Management Plan; NMFS = National Marine Fisheries Service

The inability to quantitatively predict the benefits of additional Council involvement (as further explained below in this paper) makes it difficult to evaluate the question of whether to create an FMP(s) for river herrings and shads. As a result, staff took a qualitative approach to address this

question, utilizing quantitative data when possible. This paper concludes that a reasonable case can be made for two scenarios: 1) direct management by the Council now and 2) Council consideration in a few years after the results of other recent river herring and shad conservation efforts are understood.

The Magnuson-Stevens Act

The Magnuson-Stevens Act provides for management of fish by the Council. It states that “[e]ach Council shall...for each fishery under its authority that *requires* conservation and management, prepare and submit to the Secretary (A) a fishery management plan” 16 U.S.C. § 1852(h)(1) (emphasis added). Recent assessments by the Atlantic States Marine Fisheries Commission (Commission) clearly demonstrate that river herring and shads are generally in need of conservation and management. Many runs that can be assessed appear substantially depleted compared to historic data, and landings are a fraction of historic productivity (ASMFC 2007 and 2012). However, this paper presumes that to determine if a fishery that is already being managed to some degree *requires* additional conservation and management as a directly managed stock in a Council FMP under the Magnuson Stevens Act, an evaluation is necessary of what other management may be in place or likely to occur (and the prospects for success) if the Council does not include river herring and shads in an FMP, and also what impacts Council management would likely have beyond those other management endeavors.

The Magnuson-Stevens Act provides a definition of conservation and management in its definition section:

- (5) The term "conservation and management" refers to all of the rules, regulations, conditions, methods, and other measures
 - (A) which are required to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining, any fishery resource and the marine environment; and
 - (B) which are designed to assure that—
 - (i) a supply of food and other products may be taken, and that recreational benefits may be obtained, on a continuing basis;
 - (ii) irreversible or long-term adverse effects on fishery resources and the marine environment are avoided; and
 - (iii) there will be a multiplicity of options available with respect to future uses of these resources.

If there was no management of river herrings and shads currently, it would seem clear that some Council action would be required. If there had been historical management but no recent additions or changes to those measures then it would also seem clear that action would be required, since river herring and shad stocks have not recovered. However since there have been recent actions and other actions are in the works (detailed below), it is unclear if conservation and management with an FMP under the Magnuson-Stevens Act is required. This paper looks at this question to inform a decision by the Council.

3.0 National Standard 7

National Standard 7 states that "[c]onservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication." 16 U.S.C. §1851(a)(7). Guidelines for National Standard 7 begin by stating that "[t]he principle that not every fishery needs regulation is implicit in this standard."

Striped Bass and Lobster may be examples of fisheries which generally require conservation and management but do not need a Council-based FMP since the Atlantic States Marine Fisheries Commission (Commission) and state efforts appear able to achieve effective management.

National Standard 7 guidelines provide direction on deciding whether a Council is required to engage in direct management of a fishery through a federal FMP. National Standard 7 (in the law) states that "[c]onservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication." (16 U.S.C. §1851(a)(7)) but does not directly address the question of "Whether to manage or not?" However, determining an answer to whether conservation and management is "required" still needs an evaluation, and the criteria in the National Standard 7 guidelines are a reasonable framework for examining the question

The guidelines related to National Standard 7 recommend that the following criteria be considered when deciding whether a fishery needs management through an FMP:

- (1) The importance of the fishery to the Nation and to the regional economy.
- (2) The condition of the stock or stocks of fish and whether an FMP can improve or maintain that condition.
- (3) The extent to which the fishery could be or is already adequately managed by states, by state/Federal programs, by Federal regulations pursuant to FMPs or international commissions, or by industry self-regulation, consistent with the policies and standards of the Magnuson-Stevens Act.
- (4) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution.
- (5) The economic condition of a fishery and whether an FMP can produce more efficient utilization.
- (6) The needs of a developing fishery, and whether an FMP can foster orderly growth.
- (7) The costs associated with an FMP, balanced against the benefits (see paragraph (d) of this section as a guide). (d) Analysis. The supporting analyses for FMPs should demonstrate that the benefits of fishery regulation are real and substantial relative to the added research, administrative, and enforcement costs, as well as costs to the industry of compliance. In determining the benefits and costs of management

measures, each management strategy considered and its impacts on different user groups in the fishery should be evaluated. This requirement need not produce an elaborate, formalistic cost/benefit analysis. Rather, an evaluation of effects and costs, especially of differences among workable alternatives, including the status quo, is adequate. If quantitative estimates are not possible, qualitative estimates will suffice.

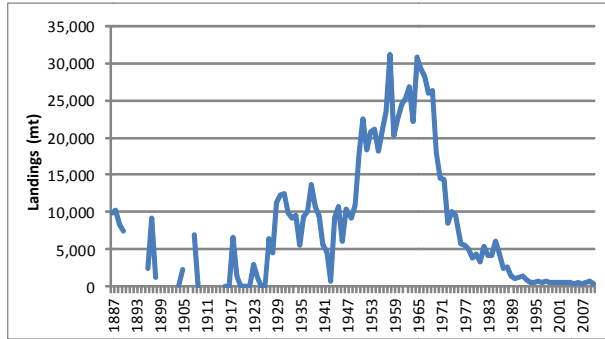
Each of these criteria is examined below.

3.1 The importance of the fishery to the Nation and to the regional economy.

This section describes several types of value including commercial, recreational, ecological, existence, and cultural. These are not necessarily the only types of value, and this is not an exhaustive treatment of the subject. The description does establish that these fisheries likely have, or at least could have if revived, substantial importance to the nation.

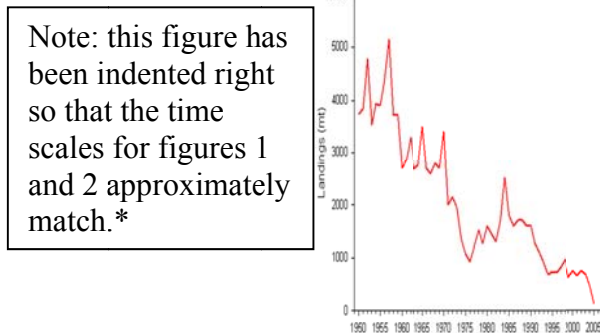
First, while the historical peak commercial river herring and shad catches were likely unsustainable, these species have supported substantial commercial fisheries in the past that were, and could be important to their regional economies. Benefits of potential higher future harvests would accrue to producers in the form of profits (revenues minus costs) and to consumers in the form of higher consumer surplus (the difference between consumers willingness to pay and what they actually had to pay). Because of the lack of information about what level of harvest would actually be sustainable (as well as unknown economic factors such as production costs), it is not possible to quantify the *economic value* of these potential landings. However, given the available price data in recent river herring and shad Commission plan amendments (ASMFC 2009, ASMFC 2010), if total combined sustainable landings of 4,000 mt (about 8.6 million pounds) each of river herrings and shads were possible, and if an average ex-vessel price of \$0.27/Lb. and \$1.09/Lb. is used for river herring and shad, respectively (these values were reported by Commission staff, K. Taylor, for 2012 fisheries), this example would result in about \$12 million dollars per year in ex-vessel revenues (1 mt equals about 2204.6 pounds). It is important to note that higher landings may result in lower prices per pound so the ex-vessel value of a higher quantity of fish may be lower. Figures 1-2 below describe historical coastwide commercial landing trends for river herrings and American shad, respectively.

Figure 1. Commercial River Herring Landings



Source: http://www.asmfc.org/speciesDocuments/shad/stockassmtreports/riverHerringStockAssessmentOverview_May2012.pdf

Figure 2. Commercial American Shad Landings



Source: <http://www.nefsc.noaa.gov/sos/spsyn/af/shad/> *earlier shad landings peaked around 22,000 mt in 1896 after rising rapidly in the late 1800s before declining in the early 1900s to approximately 4,000-5,000 mt by 1930 (DOI, 1968 - <http://www.nativefishlab.net/library/textpdf/16110.pdf>)

Second, there is economic value in recreational fishing and subsistence fishing, which can be important to local and regional economies. Presumably each fishing trip provides some value to each angler, whether in the form of recreation or food. If fish runs increase, there can be benefits related to higher angler satisfaction from higher catch each trip and/or related to taking more trips. For river herring, recreational benefits primarily accrue related to their use as bait for other, larger fish but there is still definite value in that respect (some fishermen pay \$1-\$3 per fish for similar live baits depending on local conditions, based on personal communication with Kate Taylor (ASMFC) and staff observations at local tackle stores). For shad, they are often the primary target but may also be used as bait. Recreational catch data on these species is poor since recreational catch primarily takes place out of the geographical scope of the NMFS recreational surveys, but harvest is currently relatively low due to the moratoria and other recreational restrictions.

The general literature on the value of recreational fishing is well developed, though little information is available specific to river herring and/or shad fishing. One study did estimate an annual aggregate "willingness to pay" (value) of \$3.2 million dollars for Delaware River shad fishing in 1986 (based on 63,000 angler days and a per angler day value of \$50 - Lupine and Miller 1987), which is equivalent to \$6.5 million in 2012 dollars. Additional reference

documents on the general economic value of saltwater recreational fishing in the Mid-Atlantic may be accessed at http://www.st.nmfs.noaa.gov/st5/RecFishEcon_pubs.html. An econometric analysis is beyond the scope of this document, but based on the large existing body of recreational-demand literature, there are often substantial socio-economic benefits related to improved recreational fisheries and there is no reason to conclude that this would not be the case with river herrings and shads.

Third, there could be indirect ecological value related to recreational activities. This comes from river herrings' and shads' role as forage species for higher trophic level predators such as striped bass or whales. Higher forage populations could indirectly help predator populations, which support better recreation such as fishing or whale-watching. From this perspective the ecological benefits of healthy populations create recreational benefits, as described above. There are ways to measure these benefits but not within the scope of this paper.

Fourth, there are non-market existence values (i.e., value gained by individuals related to the knowledge that these species are being conserved successfully) that can result from successful management, especially given these species role as forage. Public interest in this issue demonstrates that a segment of the general public holds a certain value for the knowledge that these fisheries are being sustainably managed, and even if each individual's value is small the total value may be quite large when many people are involved. While there are not existing studies related to non-use benefits from river herring and shad, there are many non-use studies on other environmental issues documenting the occurrence of such values.

Finally there is cultural value, which may be thought of as a separate type of existence value. River herring and shad runs are or have been important culturally for many communities (just Google "Shad Festival" or "Herring Festival") and there can also be cultural value beyond food value related to subsistence fishing (e.g. Mashpee Wampanoag Indian Tribe on Cape Cod, Massachusetts (ASMFC 2011)). While difficult to quantify, this is another potential benefit related to river herring and shad conservation that contributes toward its importance to the Nation. The recent Commission Shad and River Herring Plans also describe that river herring and shad festivals can be important sources of regional economic activity. If the related economic activity is lost, replacement activities will mitigate the net loss, but there is still some loss of net value and certainly local or regional distributional consequences in terms of jobs.

Benefits Summary: Healthier river herring and shad runs and fisheries would likely constitute substantial value to the Nation, but it is beyond the scope of this paper to estimate what that value might be.

3.2 The condition of the stock or stocks of fish and whether an FMP can improve or maintain that condition.

This criterion really asks two separate questions, and they are addressed separately below.

3.2.a The condition of the stock or stocks of fish

Coastwide absolute river herring and shad abundance estimates are not available (we only have relative indices and trends) so overfished/overfishing determinations are not possible. With a few exceptions, current river-specific absolute river herring and shad abundance estimates are also not available. As described below, these species are generally considered "depleted" due to a variety of factors.

In the most recent Commission river herring stock assessment (ASMFC 2012), of the 24 river herring stocks for which sufficient data are available to make a conclusion, 23 were depleted relative to historic levels and one was increasing. The status of 28 additional stocks could not be determined because the time-series of available data was too short. Estimates of coastwide abundance and fishing mortality could not be developed because of the lack of adequate data. The "depleted" determination was used instead of "overfished" because of the many factors that have contributed to the declining abundance of river herring, which include not just directed and incidental fishing, but likely also habitat issues (including dam passage and water quality), predation, and climate change. There are no coastwide reference points.

As part of the listing determination for river herring, NMFS completed an extinction risk analysis (http://www.nero.noaa.gov/prot_res/candidatespeciesprogram/RiverHerringSOC.htm). This analysis investigated trends in river herring relative abundance for each species range-wide as well as for each identified stock complex. This analysis found that "the abundance of alewife range-wide significantly increased over time (mid 1970s-2012), but the increase in blueback herring abundance was not significant (page 7 and Figures 8 and 9). These range-wide analyses incorporated data from fishery independent surveys with the widest geographic extent, specifically the Northeast Fisheries Science Center spring and fall bottom trawl surveys and Canada's Department of Fisheries and Oceans (DFO) Scotian Shelf survey. Stock-specific analyses incorporated run count data and stock-specific fishery-independent surveys. Stock-specific analyses indicated that the abundance of the Canadian alewife stock complex was significantly increasing, the abundance of the mid-Atlantic blueback herring stock complex was significantly decreasing, and all other analyzed stock complexes were not significantly increasing or decreasing in abundance.

The most recent American shad stock assessment report (ASMFC 2007) identified that American shad stocks are highly depressed from historical levels. Of the 24 stocks of American shad for which sufficient information was available, 11 were depleted relative to historic levels, 2 were increasing, and 11 were stable (but still below historic levels). The status of 8 additional stocks could not be determined because the time-series of data was too short or analyses indicated conflicting trends. Taken in total, American shad stocks do not appear to be recovering. The assessment concluded that current restoration actions need to be reviewed and new ones need to be identified and applied. These include fishing rates, dam passage, stocking, and habitat restoration. There are no coastwide reference points for American shad. There is no stock assessment available for hickory shad.

3.2.b Whether a Council fishery management plan can improve river herring and/or shad stocks?

This is probably the most critical question, but unfortunately it is characterized by uncertainty regarding the effectiveness of any actions that the Council could/would take with an FMP. The underlying roots of this uncertainty are the difficulty in assessing these species, the lack of understanding about what impediments to run productivity (dams, water quality/quantity, fishing, predation) are most pressing, and the uncertainty about the Council's ability to impact issues other than fishing mortality. Given that we do not know what proportion of the stock is removed through incidental catch it is also not possible to quantify the impact of that catch and know how much we would need to reduce catch by to have a positive impact on the stock.

Based on how Council management typically operates, there are some factors that suggest that a Council FMP could improve river herring and/or shad stocks, and there are some factors which suggest that a Council FMP might not have much impact. The following discussion describes these factors.

1. There would be some additional federal support of River Herring and Shad coordination and management (assessments, FMP and specifications review, etc.).

Coordination

At present, there is federal involvement by U.S. Fish and Wildlife Service, NMFS Northeast Regional Office staff, NMFS Northeast Fisheries Science Center staff, and Council staff (quasi-federal) in river herring and shad management. At these agencies, there are lead staffers for river herring and shad issues, though river herring and shad are not their primary responsibility. There are no river herring and shad coordinators at the NMFS Northeast Regional Office or Councils. There is a Commission coordinator however, who is involved in substantial river herring and shad coordination activities. The lead staffers at the U.S. Fish and Wildlife Service, the NMFS Northeast Regional Office and the NMFS Northeast Fisheries Science Center also engage in substantial river herring and shad coordination activities through participation in assessments, workgroups, etc.

Direct Council management may add staff with river herring and shad responsibilities (in NMFS or at the Council). Perhaps more likely given existing budget constraints, existing staff would have additional river herring and shad responsibilities added to their other tasks. If river herrings and/or shads were added as directly managed species, Council and NMFS staff would likely become more involved in conservation activities, especially in terms of how fishing interacts with the variety of challenges facing these stocks and how various local, state, regional, and federal entities interact. However, NMFS and Council staffers have become much more collaborative regarding river herrings and shads in recent years, so it is not clear how much of an additional change would be brought about by direct management. In addition to overall coordination through the Commission, the states currently coordinate substantial conservation activities with other agencies and entities (e.g. *see* Bowden 2013).

Assessments

If directly managed, the NMFS Northeast Fishery Science Center would probably become more involved in river herring and shad assessments. Adding these stocks into an FMP would not guarantee that reference points/stock determination criteria would be available - reference points are generally not available for species in the Mackerel, Squid, and Butterfish FMP due to high levels of scientific uncertainty. The same uncertainty issues would impact river herring and shad assessments (absolute abundance estimates may still be unavailable). Some additional resources would likely be expended on assessments, but the same data problems and uncertainties would be likely to plague an assessment organized or reviewed through the Northeast Fisheries Science Center as with an assessment conducted by the Commission. Assessments coming out of both the NMFS Northeast Fisheries Science Center and the Commission undergo peer-review.

If one believed that river herring and shad assessments would be more explanatory if the NMFS Northeast Fisheries Science Center had a larger or joint role in river herring and shad assessments, then direct Council management might lead to improvements. If one believes that the outcome would be similar to results from the Commission process then this is not the case. Since similar data would be used in either case, and would be characterized by similar uncertainties, it is not clear if additional NMFS Northeast Fisheries Science Center involvement would substantially improve river herring and/or shad assessments.

Additional NMFS Northeast Fisheries Science Center involvement could also occur independently of direct Council management of river herrings and shads, as occurs with striped bass assessments, which go through the review process utilized by the NMFS Northeast Fisheries Science Center even though there is no Council management plan for striped bass. Also, the NMFS Northeast Fisheries Science Center did provide staff support to the recent river herring assessment and that participation appears likely to continue.

Given current funding restrictions, additional Northeast Fisheries Science Center efforts around river herrings and shads would likely reduce effort on other species. NMFS, the Commission, and the Councils prioritize assessments regularly so a rearrangement of the planned assessment schedule would likely occur if additional Northeast Fisheries Science Center resources were to be utilized for river herrings and shads. This prioritization also determines the frequency of assessments for Council-managed species. The Commission has been working to increase the frequency of assessments (personal communication Kate Taylor, ASMFC), and it is not clear whether additional Council/federal involvement via an FMP would lead to more frequent assessments.

Related to assessments, the question has been raised whether additional research funding would be available for river herrings and shads if they were in a Council FMP. While the Council does generate some funding through its research set-aside program, money from that program can already be used to fund projects involving river herring. It is not believed that identification of river herrings and/or shads as stocks within a Council management plan would generate additional research funds, but Council management could indirectly encourage interest in research.

Bycatch (discard) Reporting and Estimation

Related to non-target catch management (most river herring are retained in high volume fisheries), another new annual activity would be integrating river herring and shad considerations into discard reporting and observer prioritization. However, this prioritization focuses only on discards. While NMFS has been diverting resources from other small mesh fisheries to mackerel and herring in recent years to get better information on river herring catch, as a stock in the fishery NMFS would have to directly describe its plans for river herring and shad discard monitoring. Also, the Council would presumably have a stronger case arguing for more monitoring and observer coverage for a managed species than it currently can make with river herrings and shads addressed as a discard issue in other managed fisheries. However, it is not clear if coverage would be increased regardless due to budget issues, and the issue remains that the links between non-target catch and river herring and shad stock statuses are not well understood. Since most river herring are retained in high volume fisheries, and NMFS's bycatch (discard) prioritization only looks at discards, this facet of additional federal involvement may not be especially fruitful. While higher observer coverage via regulatory action is likely on hold because of ongoing exploration of funding mechanisms, if coverage was mandated, NMFS's prioritization might matter even less.

Other Fisheries

Adding river herrings and/or shads as stocks in the fishery would change the nature of management actions that are available to the Council. Currently the Council is limited to addressing river herring and shad catch in its managed fisheries. Amendment 14 analyses estimated that about 24% of river herring and shad catch in federal waters was from the small mesh bottom trawl fleet (which could be targeting more than just Atlantic mackerel, squid, or Atlantic herring). As managed stocks, the Council could implement restrictions on other fisheries that interact with river herring and shad. As an example, currently the Summer Flounder, Scup, and Black Sea Bass plan generally restricts bottom trawling in certain areas/times where survey data has shown scup to aggregate. If river herring and shad were managed species, the Council could implement broader area/gear restrictions on fishing activities if such measures were demonstrated to be necessary and/or appropriate to conserve river herrings and shads. However, as described above, the impact of river herring and shad catch in federal waters and/or federally-managed fisheries is not clear. Amendment 14 also demonstrated that area-based management may be problematic for river herring and shad catch avoidance.

2. Essential Fish Habitat (EFH) would be designated for river herrings and shads.

Designating essential fish habitat (EFH) for river herrings and shads would increase NMFS's authority but not necessarily NMFS's ability to conserve habitats used by these anadromous species, especially freshwater habitats used for spawning and as juvenile nursery areas that are most affected by a wide range of human activities.

Currently, acting under the authority of the Magnuson-Stevens Act, there is a mandatory requirement that NMFS must designate essential fish habitat for managed species and issue essential fish habitat conservation recommendations to federal agencies for activities proposed,

funded, permitted, or undertaken by those agencies. Designation of essential fish habitat for river herrings and shads would expand the geographic boundaries where mandatory consultations would be required including most coastal rivers and their watersheds on the Atlantic coast.

EFH Consultations (summary from <http://www.nero.noaa.gov/hcd/appguide1.html>)

Federal agencies which fund, permit, or undertake activities that may adversely affect EFH are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond in writing to NMFS's recommendations. Wherever possible, NMFS is utilizing existing interagency coordination processes to fulfill EFH consultations with federal agencies. These existing coordination procedures include the National Environmental Policy Act (NEPA), Endangered Species Act, Clean Water Act, and Fish and Wildlife Coordination Act. Use of these existing processes allows for efficient project review by NMFS and the other federal agencies.

Although the federal action agency is ultimately responsible for complying with the EFH Consultation requirements of the Magnuson-Stevens Act, the agency may designate a non-federal representative to conduct an abbreviated consultation or prepare an EFH Assessment. Generally this means that a permit applicant or consultant prepares the required EFH Assessment.

There are basically two types of consultations, abbreviated and expanded. The type of consultation necessary depends upon the magnitude of the adverse effect on EFH. Abbreviated consultations are used when a proposed project will have a less than substantial adverse impact on EFH. Expanded consultations are used when the adverse impact on EFH may be substantial. Regardless of consultation type, there are four required components to consultations:

1. Notification - The federal agency must notify NMFS regarding a proposed action that may adversely affect EFH. The notification will typically be in the form of a Public Notice, Draft Environmental Assessment (EA), or Draft Environmental Impact Statement (EIS).
2. EFH Assessment - This is a written assessment of the effects of the action on EFH. The EFH Assessment will typically be incorporated within the notification document (Public Notice or Environmental Assessment) or submitted as a separate document in cases where an expanded consultation is required.

An EFH Assessment must contain the following four sections:

- A description of the proposed action.
- An analysis of the potential adverse effects of the action on EFH, and managed species.
- The federal agency's conclusions regarding the effects of the action on EFH, and the managed species. The agency's views will usually determine the type of consultation. Examples of agency determinations are as follows: A) no adverse effect to EFH (no consultation required); B) minimal adverse effect or less than substantial adverse effect to EFH (abbreviated consultation can be conducted); or C) substantial adverse effect to EFH (expanded consultation required).
- Proposed mitigation, if applicable.

Other information may also be appropriate to include in the assessment such as: the results of an on-site inspection to evaluate habitat and site-specific effects of the project; the views of recognized experts on the habitat or species that may be affected; a review of pertinent literature and relevant information; an analysis of alternatives to the proposed action including those alternatives that avoid or minimize the adverse effects on EFH. The level of detail contained within the EFH Assessment should be commensurate with the degree of adverse impact to EFH.

3. EFH Conservation Recommendations - After receipt of the completed EFH Assessment, NMFS will provide EFH Conservation Recommendations to the federal agency detailing measures that can be taken by that agency to conserve EFH.

4. Agency Response - Within 30 days of receiving NMFS' recommendations, the federal agency must provide a detailed written response to NMFS. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case where a response is inconsistent with NMFS' recommendations, the federal agency must explain (and only explain) its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the proposed action and the measures needed to minimize, mitigate or offset such effects.

The Magnuson-Stevens Act also states that Councils "shall comment on and make recommendations to the Secretary and any Federal or State agency concerning any such activity that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under its authority." While the Council's resources would likely preclude comment on every activity, this could be a component of Council coordination. However, other entities have no obligations regarding the Council's recommendations unless they prompt NMFS recommendations in the above-described consultation process.

To summarize, EFH designations provide NMFS the authority to recommend mitigation measures for proposed actions and permitting. NMFS does make such recommendations with other species' EFH and often does secure some level of mitigation. However, the agency may lack the resources to effectively implement the necessary actions related to river herrings and/or shads. Limited resources (staff and funding) already restrict the agency's ability to effectively manage essential fish habitat for Atlantic salmon and there is no reason to believe that this situation will be different for river herrings and shads if they became federally-managed species.

It is unclear if substantial and tangible habitat benefits would accrue beyond those already being pursued by the states, NMFS, and other federal agencies, especially given current funding limitations. It is unclear exactly what the additional impact on river herring and shad stocks of NMFS's essential fish habitat efforts would be since: A) states are already independently acting to improve riverine habitats B) NMFS has ongoing consultations with upstream dam removal/riverine habitat improvement projects (as well as funding them), and C) NMFS has already been successful in mitigating impacts to some habitats (tidal riverine waters) used by river herrings and shads because they are forage species for other federally-managed fish species

(e.g., bluefish), and are, therefore, considered a component of essential fish habitat for those predatory species. The impacts would likely be positive, but the extent of the impacts cannot be determined and may be small compared to ongoing activities, especially given current budget limitations.

3. Annual Catch Limits (ACLs) and Accountability Measures (AMs) (or something very similar) would likely be implemented.

Annual Catch Limits are required by the Magnuson-Stevens Act in order to prevent overfishing. To accomplish this, these limits must be the same or lower than the Acceptable Biological Catch (ABC) for a stock as provided by the Council's Scientific and Statistical Committee. That committee reviews the available information and recommends an acceptable biological catch that they certify as being unlikely to cause overfishing to the best of its ability. Accountability Measures are designed to prevent overages from occurring or pay back prior overages. Accountability measures could close fisheries at a buffered threshold before an annual catch limit is reached or institute measures to avoid future overages.

Scientific and Statistical Committee (SSC)

As part of specifications for managed species, the Council's Scientific and Statistical Committee reviews stock status and makes Acceptable Biological Catch recommendations, which form the upper limits on catches for Council-managed species. However, without estimates of absolute abundance and an improved understanding of the relative contribution of the various roadblocks to river herring and shad recovery, it is not clear that any limit set by the Scientific and Statistical Committee would have a substantial impact on river herring and shad stocks. Given the depleted status of river herring and shads, the high levels of uncertainty, and the Council's existing risk policy, it would seem likely that a low Acceptable Biological Catch recommendation would result from any Scientific and Statistical Committee recommendation, which could limit or reduce fishing mortality and potentially improve river herring and shad stocks - however, it is not measurable or certain. In addition, the Council would still have limited control over total catch since most harvest of river herrings and shads occurs in state waters. If catch in state waters was predicted to be near or above the limit set by the Council's Scientific and Statistical Committee, there would be little or no catch available to be taken from federal waters (whether as landings or discards). If catch in federal waters is a major cause of depleted river herring and shad stocks (this is unknown) then this could improve stocks, but if catch in federal waters is not a primary cause of depletion then this would not lead to major improvements in river herring and shad stocks but possibly severe restrictions on federal fisheries that catch river herrings and shads as non-target species.

Given the strict state measures in place for directed harvest, and that in the near future river herring and shad mortality caps for the Atlantic mackerel (being implemented for 2014) and Atlantic herring (under Council consideration, possible 2015 implementation) fisheries appear likely to be implemented independently of the direct management question¹, the additional

¹ The caps should control most federal waters catch since over 70% of river herring and shad catch in the Amendment 14 analyses was accounted for by the mid-water trawl fleet that targets Atlantic mackerel and Atlantic herring

benefits to river herring and shad stocks from receiving acceptable biological catch recommendations may be negligible, as catch appears generally controlled or controllable. The tools to effectively control catch in federal waters should exist independently of the stock in the fishery question, at least if the Council(s) sets mortality caps that are consistent with the best available science. The Council could also request for its Scientific and Statistical Committee to review its river herring and shad mortality cap for the mackerel fishery to help ensure that the best available science is being used regardless of whether river herrings and shads are managed fisheries, and the New England Fishery Management Council could do the same. Unless the recommendations of the Scientific and Statistical Committee were shown to not constitute best available science, they would be binding because of National Standard 2 even without being a stock in an FMP.

ACLs/AMs Continued

If ACLs/AMs were established there likely would be better accounting of annual river herring and shad catch since NMFS will be responsible for monitoring whether all catch exceeds the ACL or not. NMFS could probably produce these catch estimates without including river herring and shad as managed fisheries however (but they would not be required to do so). If overfishing limits are identified (none exist now) and then higher quality catch data are used to prevent overfishing, this would be a positive impact for any river herring and/or shad species that had ACLs/AMs. The teams working on this question have also repeatedly concluded that port-side monitoring could be an effective component to monitoring this fishery since catch-sorting is difficult. However, regardless of the ACL/AM question, additional catch reporting, monitoring, and control (through mortality caps) provisions are being implemented or developed for river herrings and shads through Amendment 5 to the Atlantic herring plan, Amendment 14 to the Atlantic mackerel, Squid, and Butterfish plan, and Framework 3 to the Atlantic herring plan. While NMFS may not approve all of the monitoring provisions initially recommended in these amendments, discussions among Council and regional office staff are leading to options that could be approvable and serve the intended purposes of the recommended measures.

One question that has surfaced repeatedly is “Could the Council add river herring or shad as stocks in the fishery but use the ACL/AM flexibility provisions of the National Standard 1 guidance to defer to the Commission for primary management?” The North Pacific Fishery Management Council has implemented such a system for salmon and defers salmon management to Alaska. This could theoretically allow the designation of Essential Fish Habitat and result in greater federal resources without having to deal with ACLs for the currently data-poor river herring and shad stocks. There are several key issues however, which become evident when reviewing analysis for updating the North Pacific Fishery Management Council's salmon plan (<http://www.fakr.noaa.gov/npfmc/>), where Alaska has primary authority even though it is a federally managed species. First, Alaska has a long history of well-documented successful/sustainable management with salmon, with specific escapement-based methodologies for determining catch levels. Second, the salmon situation is different in that river herring and shad catch appears to not even be nearly as well documented (especially at the species level) as salmon catch in Alaska. Existing or pending Commission moratoriums will likely address most of the landings control but not discards in state waters, though pending mortality caps should control incidental catch in federal waters. For these reasons it currently seems unlikely that a Council FMP could make the case that turning over management to the Commission will meet

the requirements of the Magnuson Stevens Act. If this was attempted but rejected then the responsibility for annual catch limits would fall back to the Council. This was the viewpoint of the Amendment 14 Fishery Management Action Team and remains the perspective of the Amendment 15 Fishery Management Action Team.

The ACL flexibility guidelines also still require consistency with Magnuson (alternatives to ACLs/AMs would have to achieve the same basic results). So even if under an FMP primary catch management could be ceded to the Commission, the Council's suite of management measures would still have to function as ACLs/AMs in that an overall Acceptable Biological Catch would not be able to be exceeded. Thus the Council would still have to implement hard caps on its other managed species to control overall catch based on a recommendation from its Scientific and Statistical Committee absent another authority on the matter. Thus while there might not be ACLs/AMs on paper, the caps on incidental catch in Council-managed fisheries would need to have the same function as ACLs/AMs in order to be consistent with the Magnuson Act and the National Standard One final rule guidelines. Catch in non-Council managed fisheries would also have to be addressed.

While Commission/Council coordination for river herring and shad issues has been extensive in the last 2 years, the ramifications of ACLs would likely lead to additional collaboration. The Council would likely engage in complementary management with the Commission and ACLs or other catch quotas for federal management would be based on ABCs provided by its Scientific and Statistical Committee and would have to account for any state fishing mortality beyond the control of the Council. The Council and Commission would likely negotiate (via a joint meeting) how to utilize the ABC provided by the Scientific and Statistical Committee. While the Council and Commission may come to an agreement, the Council would be bound to enact measures that keep catch at or below the ABC regardless. This could mean closing other federal directed fisheries quite earlier than would otherwise occur if state-waters catch approached (or was expected to approach) the ABC. The exact accountability measures would be developed during implementation if that is the chosen path, but since the states are not bound by the Scientific and Statistical Committee's decision, and since substantial catch may occur in state waters, and an ABC could be quite low, impacts on federal fisheries like Atlantic herring and mackerel that catch river herrings and/or shads could be substantial. Mortality caps for federal fisheries could be part of the accountability measures that are used, but they would have to be set low enough such that state waters catch plus any mortality caps were expected to restrain catch at or below the ABC. While the Council could be unable to totally control all mortality because of state fisheries and discards in state waters, mortality in federal waters would be limited. Mortality caps being developed for the Atlantic mackerel and Atlantic herring fisheries should also control river herring and shad mortality in federal waters.

3.3 The extent to which the fishery could be or is already adequately managed by states, by state/Federal programs, by Federal regulations pursuant to fishery management plans or international commissions, or by industry self-regulation, consistent with the policies and standards of the Magnuson-Stevens Act.

The recent negative Endangered Species Act Determination by NMFS describes the existing management measures being taken for river herring and is utilized here (see link at: <http://www.nero.noaa.gov/stories/2013/riverherring.html>). As wide-ranging anadromous species, alewife and blueback herring are subject to numerous Federal (U.S. and Canadian), state and provincial, Tribal, and inter-jurisdictional laws, regulations, and agency activities. These regulatory mechanisms are described in detail in the following section.

International

The Canadian Department of Fisheries and Oceans manages American shad, alewife, and blueback herring fisheries that occur in the rivers of the Canadian Maritimes under the Fisheries Act (R.S.C., 1985, c. F-14). The Maritime Provinces Fishery Regulations includes requirements when fishing for or catching and retaining river herring in recreational and commercial fisheries (Canadian Department of Fisheries and Oceans, 2006; <http://laws-lois.justice.gc.ca>).

Commission (ASMFC) and Enabling Legislation

Authorized under the terms of the Atlantic States Marine Fisheries Compact, as amended (Pub. L. 81-721), the purpose of the Commission is to promote the better utilization of the fisheries (marine, shell, and anadromous) of the Atlantic seaboard ``by the development of a joint program for the promotion and protection of such fisheries, and by the prevention of the physical waste of the fisheries from any cause."

Given management authority in 1993 under the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA - 16 U.S.C. 5101-5108), the Commission may issue interstate FMPs that must be administered by state agencies. If the Commission believes that a state is not in compliance with a coastal FMP, it must notify the Secretaries of Commerce and Interior. If the Secretaries find the state not in compliance with the management plan, the Secretaries must declare a moratorium on the fishery in question.

The Commission manages river herring and shad stocks under the authority of section 803(b) of the ACFCMA (16 U.S.C. 5101 et seq.), which states, in the absence of an approved and implemented FMP under the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.) and, after consultation with the appropriate Fishery Management Council(s), the Secretary of Commerce may implement regulations to govern fishing in the Exclusive Economic Zone (EEZ), i.e., from 3 to 200 nautical mi (nm) offshore. The regulations must be: (1) Compatible with the effective implementation of an Interstate FMP (Commission Plan) for American Shad and River Herring developed by the Commission; and (2) consistent with the national standards set forth in section 301 of the Magnuson-Stevens Act.

The states, through the Commission and its Interstate FMP for Shad and River Herring, appear to have effectively controlled directed harvest of river herrings and shads in state waters. The Commission also has a stock assessment process in place that effectively integrates data from the states, though there are a variety of data gaps. The Commission peer-reviewed stock assessment process integrates data from both the states' and federal waters and the stock assessment committee has both NMFS and U.S. Fish and Wildlife Service representatives.

The Magnuson Stevens Act precludes federal regulation of a fishery in state waters unless the fishery occurs predominantly in federal waters. 16 U.S.C. § 1856(3)(b). All river herring and American shad state fisheries that have not been designated by the Commission as sustainable were closed by January 1, 2013. The Commission has communicated to the Council (Dec 5, 2012 letter, attached) that it will take 3-5 years to determine the effect of these measures. In the same letter, the Commission encouraged exploration of the concept of Council management but also indicated a preference that the Commission would retain authority to manage in-river state-water fisheries. The Council would not have the authority to manage in-river state-water fisheries, and the potential consequences of this on annual catch limits and accountability measures are described above.

It is not clear that states/the Commission have effectively controlled discards in state waters, but they could and would be in a better position to do this given the Council's limited authorities in state waters. State regulations also appear likely to avoid redevelopment of directed ocean fisheries for river herrings and shads since outside of approved state-specific sustainable FMPs, possession is either banned or only allowed as limited incidental catch related to directed landings of other species.

In addition to the state sustainability plan mandate, the Commission makes recommendations to states for the conservation, restoration, and protection of habitat. States are involved in many habitat improvement projects. The Commission also requires states to implement fisheries-dependent and independent monitoring programs to provide data for use in future stock assessments.

Magnuson-Stevens Act

The Magnuson-Stevens Act is the primary law governing marine fisheries management in Federal waters. The Magnuson-Stevens Act was first enacted in 1976 and amended in 1996 and 2006. Most notably, the Magnuson-Stevens Act aided in the development of the domestic fishing industry by phasing out foreign fishing. To manage the fisheries and promote conservation, the Magnuson-Stevens Act created eight regional fishery management councils. A 1996 amendment focused on rebuilding overfished fisheries, protecting Essential Fish Habitat (EFH), and reducing bycatch. A 2006 amendment mandated the use of Annual Catch Limits (ACL) and Accountability Measures (AM) to end overfishing, provided for widespread market-based fishery management through limited access privilege programs, and called for increased international cooperation. The likely key provisions for river herrings and shads are the ACLs and AMs (described above), EFH (described above), bycatch (discard) reduction requirements, and discretionary authority to generally reduce non-target interactions. The discussions above address the ACL and AM issues in detail, but additional information on EFH and bycatch is provided next.

The Magnuson-Stevens Act requires that Federal FMPs contain conservation and management measures that are consistent with the ten National Standards. National Standard 9 states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch (discards) and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. The Magnuson-Stevens Act defines bycatch as fish that are harvested in a fishery, but which are not sold or kept for personal use. This includes economic discards and regulatory discards. River herring is encountered both as discards and caught and landed in Federal fisheries. While there is no directed fishery for river herring in Federal waters, river herring co-occur with other species that have directed fisheries (Atlantic mackerel, Atlantic herring, whiting, squid and butterfish) and are either discarded or retained in those fisheries when caught.

The mortality caps being implemented/developed for the Atlantic mackerel and Atlantic herring fisheries respectively appear likely to be able to control total catch (and therefore discards/bycatch) of river herrings and shads in federal waters. The overall catches will depend on the limits the Councils choose. The precision of the estimates generated by the caps will depend on observer coverage, but that will be the case regardless of whether river herrings and shads are directly managed species or not.

Essential Fish Habitat Under the Magnuson-Stevens Act

Under the Magnuson-Stevens Act, there is a requirement to describe and identify EFH in each Federal FMP. EFH is defined as ". . . those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The rules promulgated by the NMFS in 1997 and 2002 further clarify EFH with the following definitions: (1) Waters--aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; (2) substrate--sediment, hard bottom, structures underlying the waters, and associated biological communities; (3) necessary--the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and (4) spawning, breeding, feeding, or growth to maturity--stages representing a species' full life cycle. EFH has not been designated for alewife or blueback herring, but has been for some other relevant species.

River herrings and shads can be found along the Atlantic coast of North America, from the Southern Gulf of St. Lawrence, Canada to the southeastern United States and Florida. They are anadromous, so they spawn and do early maturing in freshwater rivers and further mature and live as adults in the ocean. Conservation measures implemented in response to the designation of Atlantic salmon EFH likely provide the most conservation benefit to river herrings and shads over any other EFH designation. Atlantic federal coastal waters are generally also designated as EFH for other species (e.g. Atlantic herring, Atlantic mackerel, southeast coastal pelagics, bluefish, etc.) but EFH impacts and consultations in coastal/pelagic waters are not as likely to be critical. River herrings, shads, and Atlantic salmon utilize the same areas for in-river dependent life stages however (where impacts are more likely due to water passage and water quality issues), and the in-river geographic range in which river herring may benefit from the designation of Atlantic salmon EFH extends from Connecticut to the Maine/Canada border.

Table 2. Magnuson-Stevens Act Required Plan Provisions and How They May be Addressed by Existing Authorities.

Provision	Current measures using existing authority
Measures for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery	<ul style="list-style-type: none"> • Commission Amendments 2 and 3 to the Commission Plan for Shad and River Herring, which requires states to close their waters to recreational and commercial river herring harvest unless they have an approved sustainable plan in place that will “not diminish the potential future stock reproduction and recruitment.” Currently ME, NH, RI, NY, NC and SC have approved plans for river herring; DE River Basin, Potomac River Fisheries Commission, NC, SC, GA and FL have plans for shad (Atlantic Coastal Fisheries Cooperative Management Act - ACFCMA). • Proposed catch caps in the Atlantic mackerel and Atlantic herring fisheries will address incidental catch (Magnuson-Stevens Act, through existing FMPs).
Description of the fishery	<ul style="list-style-type: none"> • Amendments 2 and 3 to the Commission Plan for Shad and River herring describe commercial/recreational fisheries in state waters (ACFCMA). • Atlantic herring and MSB actions that relate to river herring and shad, most recently Amendments 5 and 14, describe river herring and shad catch in federal waters (Magnuson-Stevens Act, through existing FMPs).
Assessment and specification of present and probable future condition of, and the maximum sustainable yield and optimum yield from the fishery.	<ul style="list-style-type: none"> • Present condition of the fishery is described in recent Commission stock assessment. • Trend analysis for river herring included in recent Endangered Species Act decision.
Assessment and specification of domestic harvesting and processing capacities	<ul style="list-style-type: none"> • U.S. fishing vessels are capable of, and expected to, harvest the optimum yield from the river herring and shad fisheries. U.S. processors are also expected to process the harvest of U.S. fishing vessels. None of the optimum yield from this fishery can be made available to foreign fishing.
Specification of the pertinent fishery data that shall be submitted to NMFS	<ul style="list-style-type: none"> • Amendments 2 and 3 to the River Herring and Shad Commission Plan specify fishery dependent and fishery independent monitoring requirements (ACFCMA). • At-sea monitors and port-side samplers collect species composition and biological information related to river herring and shad (Magnuson-Stevens Act, related to existing FMPs).
Provision of temporary adjustments to fishery access because of weather or other ocean conditions affecting the safe conduct of the fishery	<ul style="list-style-type: none"> • Could be provided to states on an as needed basis.

Provision	Current measures using existing authority
Description and identification of essential fish habitat, and minimization to the extent practicable adverse effects on such habitat caused by fishing	<ul style="list-style-type: none"> • Amendments 2 and 3 to the River Herring and Shad Commission Plan require states to identify, categorize and prioritize important existing and historic shad and river herring and shad habitat within its area of jurisdiction, establish periodic monitoring to ensure the long-term health and viability of the habitat, and develop plans to restore access to rivers (ACFCMA). • EFH consultations for currently managed species, including Atlantic salmon, Atlantic herring, and Atlantic mackerel could benefit river herring and shad where their habitats overlap (Magnuson-Stevens Act). • Critical habitat consultations for Atlantic salmon and Atlantic sturgeon could benefit river herring and shad where their habitats overlap (Endangered Species Act). • Consultations related to hydroelectric projects could benefit river herring and shad (Federal Power Act). • Federal protection of water quality is afforded through the Federal Water Pollution Control Act (also called the “Clean Water Act”). This act has played a role in reducing discharges of pollutants, restricting the timing and location of dredge and fill operations, and affecting other changes that have improved river herring and shad habitat in many rivers and estuaries. • Other state and federal habitat restoration activities (as described in this document).
Specification of the nature and extent of scientific data which is needed for effective implementation of the plan	<ul style="list-style-type: none"> • Current research needs were identified in Amendments 2 and 3 to the River Herring and Shad Commission Plan, and the most recent assessments for river herring and shad (ACFCMA).
Description of the likely effects of management measures on fishery participants and fishing communities	<ul style="list-style-type: none"> • National Environmental Policy Act (NEPA) analyses are conducted for all federal actions (not just fishery management measures) to evaluate the impacts of the federal action on fishery participants and fishing communities.
Specification of objective and measurable criteria for identifying when the fishery to which the plan applies is overfished and conservation and management measures to prevent overfishing, end overfishing, and rebuild the fishery as appropriate	<ul style="list-style-type: none"> • KEY POTENTIAL BENEFIT of Magnuson-Stevens Act; this would be required in a Federal FMP. • No definition currently for river herring in Amendment 2 to the Shad and River Herring Commission Plan. • The most recent stock assessment (ASMFC 2007) concluded that the definition of overfishing in Amendment 1 to the Shad and River Herring Commission plan that focused only on directed fishing mortality (F) was no longer valid for American shad stocks because shad are affected by several sources of human-induced mortality, including directed fishing (F), fish passage mortality at dams, mortality from pollution, and bycatch and discard mortality in indirect fisheries activity.
Assessment of the amount and type of bycatch occurring in the fishery and minimize bycatch to the extent practicable	<ul style="list-style-type: none"> • Adjustments to federal monitoring programs can be made to assess river herring and shad bycatch in federal fisheries (Magnuson-Stevens Act, through existing FMPs). • Proposed catch caps to minimize bycatch in Atlantic herring and Atlantic mackerel fisheries (Magnuson-Stevens Act, through existing FMPs).
Assessment of recreational release mortality and minimization of such mortality to the extent practicable	<ul style="list-style-type: none"> • States and jurisdictions must monitor recreational catch and effort within certain specified rivers under Amendments 2 and 3 of the Shad and River Herring Commission Plan. Techniques used to gather this data may include creel surveys, surveys of license/permit holders, Marine Recreational Fisheries Statistical Survey (MRFSS) / Marine Recreational Information Program (MRIP) and reporting requirements for obtaining/maintaining license or permit (ACFCMA).

Provision	Current measures using existing authority
	<ul style="list-style-type: none"> • Amendments 2 and 3 to the Commission Plan for Shad and River Herring, which requires states to close their waters to recreational and commercial river herring harvest unless they have an approved sustainable plan in place that will “not diminish the potential future stock reproduction and recruitment.” Currently ME, NH, RI, NY, NC and SC have approved plans for river herring; DE River Basin, Potomac River Fisheries Commission, NC, SC, GA and FL have plans for shad (ACFCMA).
Allocation of harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors	<ul style="list-style-type: none"> • Could be coordinated through Councils and Commission.
Establishment annual catch limits, and measures to ensure accountability.	<ul style="list-style-type: none"> • KEY POTENTIAL BENEFIT OF Magnuson-Stevens Act; this would be required in a Federal FMP. • Catch is limited through Amendments 2 and 3 to the Commission Plan for Shad and River Herring, and under the state plans that have already been approved • Federal bycatch limits proposed in Atlantic herring and Atlantic mackerel fisheries; proposed consequence (similar to an accountability measure) is closure of directed fisheries for these species once cap is attained (Magnuson-Stevens Act, existing FMPs).

Federal Power Act (16 U.S.C. 791-828) and Amendments

The Federal Power Act, as amended, provides for protecting, mitigating damages to, and enhancing fish and wildlife resources (including anadromous fish) impacted by hydroelectric facilities regulated by the Federal Energy and Regulatory Commission (FERC). Applicants must consult with state and Federal resource agencies who review proposed hydroelectric projects and make recommendations to FERC concerning fish and wildlife and their habitat, e.g., including spawning habitat, wetlands, instream flows (timing, quality, quantity), reservoir establishment and regulation, project construction and operation, fish entrainment and mortality, and recreational access. Section 10(j) of the Federal Power Act provides that licenses issued by FERC contain conditions to protect, mitigate damages to, and enhance fish and wildlife based on recommendations received from state and Federal agencies during the licensing process. With regard to fish passage, Section 18 requires a FERC licensee to construct, maintain, and operate fishways prescribed by the Secretary of the Interior or the Secretary of Commerce. Under the Federal Power Act, others may review proposed projects and make timely recommendations to FERC to represent additional interests. Interested parties may intervene in the FERC proceeding for any project to receive pertinent documentation and to appeal an adverse decision by FERC.

While the construction of hydroelectric dams contributed to historical losses of spawning habitat, only a few new dams have been constructed in the range of these species in the last 50 years. In some areas, successful fish passage has been created; thus, restoring access to many habitats once blocked. Thus, river herring and shad may often benefit from Federal Power Act fishway requirements when prescriptions are made to address anadromous fish passage and during the re-licensing of existing hydroelectric dams when anadromous species are considered.

Anadromous Fish Conservation Act (16 U.S.C. 757a-757f) as Amended

This law authorizes the Secretaries of Interior and Commerce to enter into cost sharing with states and other non-Federal interests for the conservation, development, and enhancement of the nation's anadromous fish. Investigations, engineering, biological surveys, and research, as well as the construction, maintenance, and operations of hatcheries, are authorized. This Act was last authorized in 2002, which provided 5 million dollars for the fiscal years 2005 and 2006 (Pub. L. 107-372). There was an attempt to reauthorize the Act in 2012; however, this action has not yet been authorized.

Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-666)

The Fish and Wildlife Coordination Act is the primary law providing for consideration of fish and wildlife habitat values in conjunction with Federal water development activities. Under this law, the Secretaries of Interior and Commerce may investigate and advise on the effects of Federal water development projects on fish and wildlife habitat. Such reports and recommendations, which require concurrence of the state fish and wildlife agency(ies) involved, must accompany the construction agency's request for congressional authorization, although the construction agency is not bound by the recommendations.

The Fish and Wildlife Coordination Act applies to water-related activities proposed by non-Federal entities for which a Federal permit or license is required. The most significant permits or licenses required are Section 404 and discharge permits under the Clean Water Act and Section 10 permits under the Rivers and Harbors Act. The U.S. Fish and Wildlife Service and NMFS may review the proposed permit action and make recommendations to the permitting agencies to avoid or mitigate any potential adverse effects on fish and wildlife habitat. These recommendations must be given full consideration by the permitting agency, but are not binding. Federal Water Pollution Control Act, and amendments (FWPCA) (33 U.S.C. 1251-1376)

Also called the "Clean Water Act," the FWPCA mandates Federal protection of water quality. The law also provides for assessment of injury, destruction, or loss of natural resources caused by discharge of pollutants.

Of major significance is Section 404 of the FWPCA, which prohibits the discharge of dredged or fill material into navigable waters without a permit. Navigable waters are defined under the FWPCA to include all waters of the United States, including the territorial seas and wetlands adjacent to such waters. The permit program is administered by the Army Corps of Engineers (Corps). The Environmental Protection Agency (EPA) may approve delegation of Section 404 permit authority for certain waters (not including traditional navigable waters) to a state agency; however, the EPA retains the authority to prohibit or deny a proposed discharge under Section 404 of the FWPCA.

The FWPCA (Section 401) also authorizes programs to remove or limit the entry of various types of pollutants into the nation's waters. A point source permit system was established by the EPA and is now being administered at the state level in most states. This system, referred to as the National Pollutant Discharge Elimination System (NPDES), sets specific limits on discharge

of various types of pollutants from point source outfalls. A non-point source control program focuses primarily on the reduction of agricultural siltation and chemical pollution resulting from rain runoff into the nation's streams. This effort currently relies on the use of land management practices to reduce surface runoff through programs administered primarily by the Department of Agriculture.

Like the Fish and Wildlife Coordination and River and Harbors Acts, Sections 401 and 404 of the FWPCA have played a role in reducing discharges of pollutants, restricting the timing and location of dredge and fill operations, and affecting other changes that have improved river herring and shad habitat in many rivers and estuaries over the last several decades. Examples include reductions in sewage discharges into the Hudson River (A. Kahnle, New York State, Pers. comm. 1998) and nutrient reduction strategies implemented in the Chesapeake Bay.

Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act requires a permit from the Corps to place structures in navigable waters of the United States or modify a navigable stream by excavation or filling activities. The permitting then requires EFH Consultation.

National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321-4347)

The National Environmental Policy Act requires an environmental review process of all Federal actions. This includes preparation of an environmental impact statement for major Federal actions that may affect the quality of the human environment. Less rigorous environmental assessments are reviewed for most other actions, while some actions are categorically excluded from formal review. These reviews provide an opportunity for the agency and the public to comment on projects that may impact fish and wildlife habitat.

Coastal Zone Management Act (16 U.S.C. 1451-1464) and Estuarine Areas Act

Congress passed policy on values of estuaries and coastal areas through these Acts. Comprehensive planning programs, to be carried out at the state level, were established to enhance, protect, and utilize coastal resources. Federal activities must comply with the individual state programs. Habitat may be protected by planning and regulating development that could cause damage to sensitive coastal habitats.

Federal Land Management and Other Protective Designations

Protection and good stewardship of lands and waters managed by Federal agencies, such as the Departments of Defense, Energy and Interior (National Parks and National Wildlife Refuges, as well as state-protected park, wildlife and other natural areas), contributes to the health of nearby aquatic systems that support important river herring and shad spawning and nursery habitats. Relevant examples include the Great Bay, Rachel Carson's and Corps Basin National Estuarine Research Reserves, Department of Defense properties in the Chesapeake Bay, and many National Wildlife Refuges.

Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA), Titles I and III and the Shore Protection Act of 1988 (SPA)

The Marine Protection, Research and Sanctuaries Act protects fish habitat through establishment and maintenance of marine sanctuaries. The Marine Protection, Research and Sanctuaries Act and the Shore Protection Act regulate ocean transportation and dumping of dredge materials, sewage sludge, and other materials. Criteria that the Corps uses for issuing permits include considering the effects dumping has on the marine environment, ecological systems and fisheries resources. NMFS must be consulted per its EFH responsibilities.

State Regulations and Activities

Per Commission requirements, by January 1, 2013 the Atlantic Coast states had all either developed sustainable fishing plans that had been approved by the Commission or they had closed their waters to harvest of river herrings and shads. Some states allow an incidental landings allowance for federal fisheries while others do not. The states and their municipalities use a variety of management measures given their plans or moratoria. The states are also involved in a variety of habitat improvement projects, including water passage improvements.

Tribal and First Nation Fisheries

We have identified thirteen federally recognized East Coast tribes from Maine to South Carolina that have tribal rights to sustenance and ceremonial fishing, and which may harvest river herring for sustenance and ceremonial purposes and/or engage in other river herring conservation and management activities. The Mashpee Wampanoag tribe is the only East Coast tribe that voluntarily reported harvest numbers to the State of Massachusetts that were incorporated into the Commission Management Plan as subsistence harvest. The reported harvest for 2006 and 2008 ranged between 1,200 and 3,500 fish per year, with removals coming from several rivers. Aside from the harvest reported by Commission for the Mashpee Wampanoag tribe, information as to what tribes may harvest river herring for sustenance and/or ceremonial purposes is not available. Letters have been sent to all 13 potentially affected tribes to solicit any input they may have on the conservation status of the species and/or health of particular riverine populations, tribal conservation and management activities for river herring, biological data for either species, and comments and/or concerns regarding the status review process and potential implications for tribal trust resources and activities. To date, we have not received any information from any tribes.

Industry

Industry has also been self-regulating through cooperative catch-avoidance work with The School for Marine Science and Technology (SMAST) at the University of Massachusetts Dartmouth (<http://www.umassd.edu/smast/smastnewsyoucanuse/bycatchavoidanceprograms/>) and Cornell's Cooperative Extension Program/The Squid Trawl Network (<http://www.squidtrawlnetwork.com/>). Since there is no control group to compare performance against, it is not possible to determine the success of these networks other than reporting that fishermen have been participating in them. It seems likely that fishermen will use these catch

avoidance networks to help the fisheries stay within the mortality caps that are being implemented, but again their success is uncertain at present.

Endangered Species Act Determination - River Herring

http://www.nero.noaa.gov/prot_res/candidatespeciesprogram/RiverHerringSOC.htm

Subsequent to NMFS's findings that river herring are not endangered, NMFS also announced a variety of measures that it will be undertaking to assist river herring conservation. The agency has provided funding to the Atlantic States Marine Fisheries Commission and will be working with the Commission and other partners to implement a coordinated coastwide effort to continue to address data gaps and proactively conserve river herring and their habitat.

NMFS intends to establish a technical working group and to continue to work closely with the Commission and others to develop a long-term and dynamic conservation plan for river herring throughout both species' range from Canada to Florida. This group will attempt to quantify the impact of ongoing restoration and conservation efforts and new fisheries management measures that are being developed (e.g., mortality caps in two federal fisheries), which should benefit the species, review any new information produced from ongoing scientific studies (e.g., genetic analyses, ocean migration patterns, climate change impacts) that are completed in the next 3-5 years, and assess available data to determine whether recent reports of higher river counts in many areas along the coast in the last two years represent sustained trends. During this time, NMFS is also committed to working with partners and tribal governments to continue implementing important conservation efforts and fund needed research for river herring. NMFS intends to revisit the status of river herring within the next five years. Council staff will likely be involved in these efforts.

Endangered Species Act Listing - Sturgeon

<http://www.nero.noaa.gov/stories/2013/riverherringlistingfrnotice.pdf>

In 2012, five distinct population segments of Atlantic sturgeon were listed under the Endangered Species Act. The Chesapeake Bay, New York Bight, Carolina, and South Atlantic Distinct Population Segments of Atlantic sturgeon are listed as endangered, while the Gulf of Maine Distinct Population Segment is listed as threatened. Measures to improve habitats and reduce impacts to Atlantic sturgeon may directly or indirectly benefit river herring. Atlantic sturgeon critical habitat will be specified in the next year. Like river herrings and shad, Atlantic sturgeon are anadromous; adults spawn in freshwater in the spring and early summer and migrate into estuarine and marine waters where they spend most of their lives. As with Atlantic salmon, many of the habitats that Atlantic sturgeon occupy are also habitats that river herring use for spawning, migration and juvenile rearing. The geographic range in which river herring may benefit from Atlantic sturgeon Endangered Species Act protections extends from the Maine/Canada border to Florida. Therefore, any protection measures within this range such as improved fish passage or a reduction of water withdrawals may also provide a benefit to river herring. River herrings and/or shads travel further upriver than sturgeon to spawn so the overlap would not be complete. Rivers in which sturgeon are found and which are likely to receive critical habitat designation may be found at:

<http://www.nmfs.noaa.gov/pr/species/fish/atlanticsturgeon.htm>.

Endangered Species Act Listing - Atlantic salmon & Critical Habitat Designation

In 2009, the Gulf of Maine Distinct Population Segment of Atlantic salmon was listed as endangered under the Endangered Species Act (74 FR 29344). The Gulf of Maine Distinct Population Segment includes all anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River. Concurrently in 2009, critical habitat was designated for the Atlantic salmon Gulf of Maine Distinct Population Segment pursuant to section 4(b)(2) of the Endangered Species Act (74 FR 29300; August 10, 2009). The critical habitat designation includes 45 specific areas occupied by Atlantic salmon at the time of listing, and includes approximately 12,160 miles (19,600 km) of perennial river, stream, and estuary habitat and 308 square miles (495 sq km) of lake habitat within the range of the Gulf of Maine Distinct Population Segment in the State of Maine.

Measures to improve habitats and reduce impacts to Atlantic salmon as a result of the Endangered Species Act listing may directly or indirectly benefit river herrings and shads. Atlantic salmon are anadromous and spend a portion of their life in freshwater and the remaining portion in the marine environment. River herring occupy a lot of the same habitats as listed Atlantic salmon for spawning, breeding, feeding, growth and maturity. Therefore, protection measures such as improved fish passage or reduced discharge permits may benefit river herrings and shads.

The critical habitat designation provides additional protections beyond classifying a species as endangered by preserving the physical and biological features essential for the conservation of the species in designated waters in Maine. One of the biological features identified in the critical habitat designation for Atlantic salmon was freshwater and estuary migration sites with abundant, diverse native fish communities to serve as a protective buffer against predation. Co-evolved diadromous fish species are included in this native fish community.

The U.S. Fish and Wildlife Service and NOAA are also engaged in general riverine habitat issues with a focus on dam removal and fish passage improvement. They work in cooperation with other agencies and non-governmental agencies.

The efforts described above in this section (that will be ongoing regardless of the Council's decision regarding an FMP for river herring and/or shad) mean that many of the management activities that would normally be stimulated by management within an FMP are, or could be addressed by existing management programs and authorities. While there are some gaps that might be filled (see Section 3.2 above), this is not a case where there is a complete void of existing management.

3.4 The need to resolve competing interests and conflicts among user groups and whether Council management could further that resolution.

There is conflict between the Atlantic mackerel/herring fisheries and non-governmental organizations seeking additional monitoring and restrictions for those fisheries. The conflict involves both catch of non-target species like river herrings and shads as well as the optimal amount of directed harvest, but the most immediate issue is whether the at-sea catch of river herrings and shads is having a substantial detrimental impact on river herring and shad populations.

Since recreational fisheries have largely lost access to river herring harvest through state moratoria and shad catches are often very restricted as well if not totally banned, a fairness issue has been raised that all parties that catch river herrings and shads should be limited in similar fashions.

Establishing Council management of river herrings and shads via an FMP does not seem likely to immediately resolve these conflicts, especially because of the lack of absolute abundance estimates. If additional assessment information and additional monitoring was obtained as a result of Council management, then the conflict might be partially resolved, but probably not solved.

The Council would be an additional forum for this conflict to be addressed, so that all parties' concerns are considered - the Council has made allocations between commercial and recreational fisheries before, and theoretically an allocation could be made with river herrings and/or shads. However, as has been seen with other Council-managed species, just because an allocation exists does not mean the conflict is resolved if there are competing interests for a resource.

3.5 a) The economic condition of a fishery and b) whether an FMP can produce more efficient utilization.

Most of the fishery operations that used to catch these species either no longer exist or have moved on to other species. Since the only remaining directed fishery occurs in state waters (see summary of regulations under Section 3.3), this criterion is unlikely to be a strong factor in terms of the efficiency of harvesting operations in state waters. As a contrast, most Atlantic mackerel or Atlantic herring are caught in federal waters. However, an FMP could examine the relative value of river herrings and shads across fishing interests (commercial versus recreational) and consider efficiency in that respect. It is beyond the scope of this paper to attempt to analyze this question but potential econometric tools do exist to examine such questions.

3.6 The needs of a developing fishery, and whether an FMP can foster orderly growth.

Since there is not a developing fishery for river herring and/or shad in Federal waters, and since harvest primarily occurs in state waters, this criterion is unlikely to be a strong factor. The existing moratoria and requirement to get sustainable fishing plans approved if directed fishing is to occur for river herrings and shads also means that re-growth of the fishery should be orderly through Commission management.

3.7 The costs associated with an FMP, balanced against the benefits

(see paragraph (d) of this section as a guide). (d) Analysis. The supporting analyses for FMPs should demonstrate that the benefits of fishery regulation are real and substantial relative to the added research, administrative, and enforcement costs, as well as costs to the industry of compliance. In determining the benefits and costs of management measures, each management strategy considered and its impacts on different user groups in the fishery should be evaluated. This requirement need not produce an elaborate, formalistic cost/benefit analysis. Rather, an evaluation of effects and costs, especially of differences among workable alternatives, including the status quo, is adequate. If quantitative estimates are not possible, qualitative estimates will suffice.

Table 1 summarizes several approaches which can further be streamlined into direct management under an FMP (a-b), incremental collaboration (c), and caps plus Commission-NMFS complementary measures in federal waters.

Under (a-b), direct management, there would be substantial costs associated in developing, implementing, and running a federal FMP. The primary cost would likely be in the form of personnel opportunity costs. Several Council and NMFS staff would likely spend substantial amounts of time over the next 2-3 years developing an FMP and all of the required provisions (EFH, status determination criteria, ACLs, AMs, etc.). A larger group of NMFS, State, and Commission staff would also likely be needed to ensure adequate coordination. Staff from other Councils would likely be involved as well, especially if a joint plan was developed

Under c, incremental collaboration, the Council and Council staff would search out opportunities for collaboration, but not do much more beyond the mortality caps currently in place. Costs would be low.

Under d, focusing on caps plus encouraging and seeking to actively facilitate Commission-NMFS complementary measures in federal waters, the Council could aggressively work on some of the issues of the caps (e.g. possibly slippage, observer coverage, and Scientific and Statistical Committee review) as well as investigating what other complementary measures the Commission would like to see in Federal waters in the absence of a Council FMP. This option likely has medium costs, and most of those costs may be for other entities.

If one had a reasonable assurance that any of these efforts would substantially contribute to recovery of river herring and shad populations, the benefits (see section 3.1) would likely outweigh the costs. The problem that staff continues to have is the unclear connection between Council involvement, and the conservation benefits that would result from that specific involvement beyond other river herring and shad conservation activities that are ongoing. As described in Sections 3.3 and 3.4, many of the tasks that would take place within a federal FMP are or will be taking place in some fashion through actions at other agencies (local, state, regional, federal, non-governmental). Also, some issues (dams, water quality, predation, state catch etc.) are largely out of the scope of the Council's power to affect substantial change. Thus the additional impact of the Council's involvement is difficult to quantify, which makes evaluating the costs and benefits very difficult. It seems like the potential exists for a, b, and d to

have higher benefits than c, but comparing them to costs is impossible without a direct and discernible connection being known between additional Council involvement and river herring and shad stocks. It is true that the effects of other management efforts to date seem insufficient, but the effects of recent efforts are not known, and more efforts are underway. As described further in the conclusion, to a large degree either choice (to manage or not via an FMP) will be an experiment with unknown outcomes that will have to be monitored to determine if it continues to appear to be the best choice.

4.0 National Standard 3

National Standard 3 requires that "to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination." The "purpose" is "to induce a comprehensive approach to fishery management." The guidelines state that "Where management of a fishery involves multiple jurisdictions, coordination among the several entities should be sought in the development of an FMP." The guidelines also state that there should be discussion of "Alternative management units and reasons for selecting a particular one." National Standard 3 guidelines also state that "Where state action is necessary to implement measures within state waters to achieve FMP objectives, the FMP should identify what state action is necessary, discuss the consequences of state inaction or contrary action, and make appropriate recommendations."

Council staff interprets these recommendations as primarily guiding how management should occur, not whether management should occur. Given the purpose is "to induce a comprehensive approach to fishery management," it would seem that whatever is established as an individual stock should be managed throughout its range. In other words, if alewife in the Delaware River are treated as an individual stock, then they should be managed as a unit throughout their range. The multitude of crisscrossing stocks (which mix in federal waters) that could result from a river-specific approach probably makes such an approach infeasible. However, the National Standard also states that "interrelated stocks of fish shall be managed as a unit or in close coordination," and there is genetic analysis (unpublished but evaluated as part of the recent river herring Endangered Species Listing determination) that suggests that broader areas, including a Mid-Atlantic area, could be treated as being composed of interrelated stocks (NMFS 2012 - 2012 River Herring Stock Structure Working Group Report). If the Council decides that direct management is appropriate, a range of management units would be considered, such as described in the 2012 River Herring Stock Structure Working Group Report. Since mixing at sea between river runs or regions occurs, each management unit likely would need to be managed throughout the species range (i.e. overlapping management units for different regional stocks would need to exist). Generating catch limits for each stock and determining how to apportion catch between stock areas or how to use the regional information to determine an overall catch limit would be a very challenging and complicated, but not necessarily insurmountable, management problem. Ongoing genetic work may suggest approaches to this problem and the Council's Scientific and Statistical Committee does have extensive experience in developing catch recommendations in data poor situations.

National Standard 3 states that "to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range." It may not be practicable to manage an individual stock of fish as a unit in this case and still induce comprehensive management. Rather, to achieve this stated purpose of National Standard 3, it may only be feasible to treat multiple, or all stocks as one unit. This would induce a comprehensive approach to management and align with the fact that the stocks mix at sea. This could also facilitate a relatively simple management approach, whereby even if status determination criteria cannot be determined at river or regional levels, the Scientific and Statistical Committee could still recommend an acceptable biological catch for the management unit, which in this case could be the Atlantic Coast (which is still not an easy task without coastwide absolute abundance estimates). Since the various stocks inhabit coastal waters together, they are interrelated, so managing them as one management unit would appear consistent with National Standard 3 in that respect as well.

Again, this discussion is primarily intended to illustrate the way that management units could be evaluated if the Council decided that river herring and shads required additional conservation and management by the Council. National Standard 3 also recommends coordination when management extends jurisdictional boundaries. If the Council decided that Council management was required, then one of the first steps would be to engage the Commission, the South Atlantic Fishery Management Council, the New England Fishery Management Council, and NMFS to determine the optimal way to devise a coordinated approach. The plan would most likely be complementary with the Commission and consider being joint with the South Atlantic and New England Fishery Management Councils. Canadian involvement may also be appropriate.

5.0 Council Staff Conclusion

The ability of existing management to successfully improve river herring and shad stocks is uncertain, and declines in these species (overall landings and many runs) appear to have persisted over long time scales, on the order of 50 years or more. In this respect, since the benefits of recovered fisheries are generally substantial and enduring, one could likely justify Council management (and the investment of time and resources) on the grounds that even though the expected value of Council management is unknown (because of the unknown relative restriction of other factors like dams, water quality, predation, etc. that are largely out of the Council's control), the potential value of restored river herring and shad fisheries appears quite substantial.

However, given A) the ongoing river herring and shad conservation efforts at various levels as coordinated by the Commission and NMFS, B) the recently increased control of state landings through the Commission, C) the pending mortality caps for river herring and shad in the Atlantic mackerel and herring fisheries, D) NMFS's finding that river herrings are not endangered or threatened, and E) NMFS's commitment to be engaged in river herring conservation, it is possible that river herrings and shads may not require conservation and management by a Council FMP at this time. The existing management authorities may be sufficient to recover river herrings and shads from their depleted status. In fact, the Commission has implemented actions to successfully rebuild anadromous stocks that were in poor condition in the past (i.e.

striped bass). It is also uncertain if Council management through an FMP *could* substantially improve the status of river herrings and shads beyond what would be expected with other ongoing efforts. As such, it is difficult to say if the costs of management would be offset by increased and additional benefits to the nation given the uncertainty related to the various threats facing river herrings and shads, and the unknown impacts of recent actions by the Council and other management partners. The qualitative threats analysis summary from the river herring endangered species determination noted the following:

Rangewide, for alewife and blueback herring, no other threats rose to the level of dams, but several other stressors ranked near the moderate threat level. The Team ranked incidental catch, water quality, and predation as threats likely to have some effect on the species now and into the foreseeable future that are widespread throughout the species' range...Overall, the degree of certainty associated with these midlevel threats is much lower, primarily due to lack of information on how these stressors are affecting both species. (available at: http://www.nero.noaa.gov/prot_res/candidatespeciesprogram/RiverHerringSOC.htm).

If either option appears justifiable, the question of priorities and resources available to the Council and its management partners may be important. It is not immediately evident that Council management would or would not produce net benefits to the Nation, especially if other conservation efforts are reduced because of the time dedicated to river herrings and/or shads. The Council must ask itself if it wants to engage in river herring and shad management now with a potentially substantial but highly uncertain pay-off, or would it rather take a wait-and-see approach given that there are other recently-begun or soon-to-begin conservation efforts regarding river herrings and shads and the results of those efforts are not yet fully evident. It is likely that continued evaluation of the effectiveness of a possible FMP or of existing and pending management measures would have to be tracked on an ongoing basis to determine if whichever path is chosen remains justifiable.

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