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**RE: Comments on SAI Global's assessment of Omega Protein Corporation U.S. Atlantic menhaden purse seine**

To Whom It May Concern:

Riverkeeper, Inc. is a member supported watchdog organization dedicated to defending the Hudson River and its tributaries, protecting the drinking water supply of nine million New York City and Hudson Valley residents, while also working to halt the decline of the Hudson River's signature species and restoring their numbers to sustainable levels.

Riverkeeper is providing the following comments regarding the assessment of Atlantic menhaden by SAI Global for the Marine Stewardship Council (MSC) because we feel that menhaden best serve the environment when left in the water in sufficient quantity since they are an immensely important forage fish that is foundational in the food web. Low-trophic-level (LTL) species play an vital role in marine food webs because they are the principle means of transferring primary production from plankton to larger predatory fish, marine mammals, and seabirds.

We are also rightly concerned about the Atlantic menhaden fishery because of the ramifications to the local ecosystem as a whole and to the efforts we are currently undertaking to protect several species of Hudson River fishes that are in serious decline, most notably river herring, which is a composite species formed by alewife and blueback herring. Our concern for these fishes stems from the fate of river-specific stocks during marine migrations since it is still largely unknown as is the stock composition of river herring in bycatch of ocean fisheries. Additionally, predation displacement directed towards river herring and shad when Atlantic menhaden are removed is a key concern of ours, especially since several other forage species in our region are in decline. Adding to the uncertainty, it is unknown how much out-migrating river herring and shad would be potentially impacted through bycatch in the menhaden fishery because the species of age-0 and age-1 clupeids are known to aggregate together in late summer. When river herring and shad are out-migrating, they enter waters where and when Omega boats have recently shown their presence. With river herring and shad at such depleted levels and showing little to no recovery, any unnecessary pressure on their stocks is far too much for them to bear. Until the reverberations of the ecosystem impacts and bycatch can be verified and quantified though the



establishment of ecosystem-based management practices, the precautionary principle must be applied.

We thank MSC and SAI Global for the opportunity to comment on this important process, which can set a national model as the first application of the MSC's key (LTL policy on the United States' largest forage fishery and second largest of all fisheries by volume). In summary, the MSC must take this precedent-setting opportunity to uphold its standard for forage fish and withhold certification for Atlantic menhaden until appropriate ecosystem-based fishery management measures are implemented. The fate of what many refer to as "the most important fish in the sea," and all the predators and economies that depend upon them, lies on a razor thin edge. The MSC is in a position to use its market power to advance or undermine decades of work toward sustainability, but that label should only be applied if it is based upon scientific fact and not just inadequate and outdated management strategies or concepts. Certification without sound understanding of the spectrum of ecological consequences related to the menhaden harvest discredits the entire process and the undermines confidence associated with sustainability labeling.

Riverkeeper aims to protect the fishes that utilize the Hudson River and is actively engaged in seeking stronger conservation requirements for all forage species in our coastal waters, while advocating for the need to advance ecosystem-based fishery management. We want to congratulate SAI Global for adopting many of these recommendations, particularly those recommended in Smith *et al.* (2011) and your key LTL criteria upon which it is based. However, this menhaden certification decision is where the strength of that paper standard is put to test.

While there are a litany of relevant criteria that could be considered as part of the MSC's Fisheries Certification Requirements (FSC) by SAI Global. Our comments will focus on a few key components of the FSC as follows:

- The real and obvious need to use a precautionary approach in interpreting model outputs;
- Careful consideration of stock health indicators not accounted for by single-species model-derived reference points (*i.e.*, looking beyond ambiguous overfishing/overfished determinations);
- The use of ecosystem-based, peer-reviewed science to set management targets and thresholds, as well as a harvest strategy and control rules that offset natural variability, scientific uncertainty, and political influence, and give all stakeholders a clear, long-term vision of sustainability;
- Proven compliance by industry with all of the fishery management rules;
- The introduction of observers or sampling program to accurately detect and record the bycatch numbers and to insure integrity of the menhaden fishery;
- The perception and impact of Omega Protein's menhaden fishery activities in New York waters.



Riverkeeper believes that forage fisheries must not be certified as sustainable unless it effectively meets the MSC's key LTL standard. This requirement must include a rigorously enforced and transparent management system that effectively accounts for the role that the species plays in the ecosystem. Otherwise, that LTL standard is effectively meaningless and is nothing but a slick marketing strategy. Riverkeeper also believes that SAI Global's assessment fails to address critical considerations with regard to the science that underlies the status of the menhaden stock, the importance of menhaden to the northwest Atlantic ecosystem, the management of the fishery and compliance with its rules. Based on available science and established best practice, we believe that several of these failures, as outlined below, should immediately deny certification until they are adequately resolved by the Atlantic States Marine Fisheries Commission (ASMFC) and implemented by industry. Riverkeeper will use our influence to urge our constituency from the Hudson Valley and the greater New York City area beyond to become attentive to the situation and actively engage this fight to protect a vital life force for our region. Many of those stakeholders are still resentful at the ASMFC's decision to delay using an ecosystem-based approach in the management of the menhaden fishery. Many of these same individuals who were celebrating the return of whales and other cetaceans to New York waters were further angered by Omega's blithe indifference to dropping of nets within sight of whale watchers. This action was unsettling, showing little concern for ethical standards, which the sustainability label implies.

### **Precautionary Approach Needed For Interpreting Single-Species Model:**

The status determination criteria used for Atlantic menhaden are based on limited fishery-independent data and a number of equivocal assumptions that are likely to overestimate stock size and health. Based on the current single-species model and biological reference points, the Atlantic menhaden stock is classified as neither overfished, nor is overfishing occurring. However, these determinations are based on risky assumptions and leave too little margin for environmental oscillation or ecosystem perturbation. The Beaufort Assessment Model (BAM) used to assess menhaden during the last several assessments is heavily parameterized and has been modified in such ways as to make certain outputs questionable. In statistical modeling, there is real danger in overparameterization since overfitting of the data weakens predictability and reliability of the model, while also yielding results that can be misleading. The most recent benchmark stock assessment and its peer review acknowledge some concern about the mismatch between model predictions. The BAM model abbreviates the menhaden lifespan only using ages 0-5 and then grouping all older fish into a separate bin, when Atlantic menhaden are known to live longer. Structuring the model in this fashion results in natural mortality calculations that are likely too high, making the virtual stock seem more resilient to the effects of exploitation. The abbreviation of menhaden life estimates likely results from historically high exploitation rates, and that the population being assessed today is likely at a substantially lower abundances in comparison to decades past. These technical decisions can result in significant scientific uncertainty about essential issues ranging from life history characteristics of the species to possible localized depletion of nursery areas.



### **Single-species Reference Points:**

Current reference points used for Atlantic menhaden fishery management disregard important negative trends that should be concerning, even from a single-species perspective. There are many ways to measure the health of a fish population; some of these other measures indicate that the health of the Atlantic population is in decline. Based on the 2017 stock assessment, overall menhaden abundance (numbers of fish, a measure especially important to predators) remains near historic lows for the available time series, and abundance during the past two decades has been only about half of the abundance of the prior two decades. Recruitment has also been substantially lower in the past two decades than earlier periods and particularly poor in the primary coastwide nursery in the Chesapeake Bay. The species was historically abundant from Nova Scotia to Florida, but it has largely contracted particularly from the southern range. Turner (2017) reported that average annual weights and lengths of age-0, age-4, and age-5 Atlantic menhaden have declined at statistically significant levels. There are consequences of these size changes for the menhaden population, and for the community of its predators, regardless of how well we understand and model them. These concerning signals should raise red flags for the MSC about the health of the species and also how effectively the fishery is currently managed by the ASFMC, and are reason to -at the very least- delay certification until a new ecosystem-based management approach is implemented by industry that can solve these problems.

### **Ecological Reference Points (ERPs):**

Based on a large body of literature and data, SAI Global correctly defined menhaden as a key LTL species for the purposes of its assessment and potential MSC certification. SAI Global notes that menhaden are currently managed using single-species reference points that do not account for the role menhaden play as a key LTL species, yet that the managing body, the ASFMC, is undertaking a significant initiative with broad support from stakeholders and managers to develop ERPs which would advance this ecosystem service. SAI Global also conveys the working timeline for the development of ERPs, though fails to account for the fact that there is no guarantee that ERPs will actually be adopted by ASFMC. It must be stressed that the ERPs are meant to account for changes in the abundance of both prey and predator species when setting overfished and overfishing thresholds for menhaden. **Consequently, Riverkeeper strongly believes that the lack of ecosystem perspective in the management of the menhaden fishery is distressing, especially in consideration of the fish's vitally important role to the overall health of both the marine and estuarine food-webs and the fact that other forage fishes are in decline. Hence, so profound are the ecosystem ramifications with regards to effective fishery management decisions, as well as in determining whether harvests are judged sustainable, that its absence should result in the immediate cessation of any certification process until high-quality ERPs can be developed, pass peer review, become fully implemented, and require that all participating jurisdictions in the fishery have adopted a uniform code of regulations. Certification without complete knowledge of the impact renders sustainability to a meaningless designation and tends to undermine SAI Global's credibility.**



In addition, SAI Global mainly focuses on the ecological impacts of the menhaden fishery in Chesapeake Bay, mentioning that the fishery has primarily occurs in the Virginia, Maryland, New Jersey, and North Carolina. At no time does it list New York as a location for their fish removal activities, but their unwanted presence in our waters was noted this past year.

In the interim, SAI Global evaluated the condition of the menhaden stock against the MSC's own recommended ERP rule-of-thumb reference points for key LTL species. Concerns about the single-species based analysis of menhaden to develop these non-menhaden-specific ERPs has Riverkeeper concerned with SAI Global's findings and recommendations. At current levels the status of menhaden is only a few percentage points from recommended minimum thresholds. Based on the body of science, including Smith *et al.* (2011) and the MSC's own key LTL standard that recommends using the minimum threshold as a reference point, that tenuous margin is hardly sufficient to deem the population "healthy" from an ecosystem perspective. Though SAI Global notes that a reduction a significant reduction in the biomass target could be appropriate for Atlantic menhaden, Riverkeeper vehemently disagrees with SAI Global's assertion about what is "appropriate" since this is merely a value judgment that is lacking robust scientific or economic analysis. Their conclusion is disconnected from the MSC's own key LTL objectives based on extensive stakeholder outreach, and more importantly in this case what hundreds of thousands of east coast stakeholders, commercial and recreational fishermen, scientists, eco-tourism business owners, and the ASFMC managers themselves view as appropriate as evidenced by the current catch levels and the Commission's commitment to ERPs. In fact, only the reduction fishery would benefit from such aggressive "fish down to the threshold" strategy. In a multi-species context where many predators are in decline, there would be cascading damage. The menhaden population exhibits some concerning trends, as discussed above, but more concerning for Atlantic fisheries is the stock condition of some of their predators, like striped bass, weakfish, and some piscivorous birds and marine mammals. Supporting the idea of using a low biomass target threatens the recovery of these species and fishing a prey population down to a fraction of its unfished level in order to increase fishery yields causes not simply a reduction in the number of prey (total population), but also a change in the type of prey available (size/age) and distribution throughout their natural range. Each of these factors is important to predators finding an adequate supply of food where and when they need it. Instead, the stock under single-species management hovers near the threshold. Smith *et al.* (2011), funded by MSC and the basis for its LTL standard, and Pikitch *et al.* (2012) recommended a significantly higher target to decrease impacts on predators to balance and enhance sustainability of marine ecosystems. Both studies recommended that specific biomass thresholds that achieve ecological objectives while ensuring ongoing fishery yields. Additionally, spatial and temporal changes to recruitment patters may be occurring due to different climatic conditions, and as Bucheister *et al.* (2016) suggests, coast-wide assessment and management of species like menhaden may be obscuring important processes occurring at regional scales. They also cite changing population shifts that may be the result of climate change. The above reasons demonstrate exactly why ERPs are necessary in any determinations made about the menhaden





fishery. With any northward shift of menhaden, can we expect the reduction industry to direct the bulk of their activities northward?

Menhaden populations have dropped below recommended thresholds in the past. Reduced menhaden populations impact the abundance and diversity of predator populations, particularly if other prey options are limited or unavailable. The diets of many seabirds on the Atlantic coast are predominantly menhaden. The incredibly important but often forgotten national goal in all of this is the general restoration of the some of the Atlantic marine species, which are essential to the structure and function of healthy ecosystems, after centuries of pressure. Whale, porpoise, seal, and some predatory fish and seabird populations are recovering, and these taxa will need vast amounts of forage to continue the trend. Most disturbing is that Atlantic herring (which had four of the lowest recruitment estimates on record in 2013, 2015, 2016, and 2017)<sup>i</sup>, Atlantic mackerel (overfished with overfishing in 2016),<sup>ii</sup> American shad, alewife, blueback herring and bay anchovy are all in steep decline. With so many forage species in decreasing in abundance, the impact to piscivorous species is not without consequence. Predators and prey species do not live in isolation as the current mangement system seems to believe and until they recognize the ecosystem value of forages species and the futility of single species reference points, they will continue to mismanage the species.

Forage fish are integral to marine food webs as prey for a wide variety of higher trophic-level species. For many predators, forage fish constitute a substantial percentage of their diet, possibly making them vulnerable to reductions or fluctuations in forage fish biomass, though many papers seem to show that predator populations are erratic when forage species

Although the magnitude of the economic and cultural impacts that these declines could precipitate are hard to quantify, such effects would be felt by individuals and businesses coastwide that rely on menhaden as forage for important predator species like striped bass, whales, and seabirds. Understanding that removal of forage biomass on an industrial scale from our waters directly impacts many of our most charismatic species such as dolphins, whales, striped bass, bluefish, weakfish, fluke, sharks, tuna, cod etc. *ad infinitum*. The loss of forage biomass in the form of menhaden from our coastal waters will undoubtedly direct more predation towards our river herring and shad since they are on the same trophic level. In addition, the potential economic value of forage fish to recreational fisheries, to ecotourism e.g., the whale watching industry is estimated at \$2.5 billion (2009 USD) and the loss of revenue indirectly related to the loss of loss of forage fish (Pikitch et al. 2012). With the sudden increase of cetaceans in our local waters, the growing whale watching industry is threatened by such a loss.

The high rate of harvest from the Chesapeake Bay estuary and in coastal waters may negatively impact trophic dynamics and portends of trouble elsewhere. Dietary shifts of resident striped bass in the Bay have been demonstrated, showing a switch from largely pelagic prey like menhaden to more benthic ones such as crabs.<sup>iii</sup> Riverkeeper is very concerned that in the Hudson River estuary and other New York waters, localized depletions of menhaden can lead to predator displacements upon other species clupeids that co-occur with menhaden. These trophic



shifts are worrisome, especially if those moves are directed towards river herring and shad, which can ill afford additional pressure at the current stock status. Most recently, the ASMFC has shown that the striped bass fishery is in a state of decline and any loss of their forage as a result their diminishing biomass cannot afford further threats that may negatively impact them.

### **Harvest Strategy and Harvest Control Rules (HCR):**

In the past ten years with regard to ASMFC's Menhaden management, there has never been robust discussion of the adoption of a harvest control rule. The first-ever total allowable catch was put implemented only five years ago. Riverkeeper is not aware of any specific harvest control rules adopted by ASMFC for any fishery with clear targets, thresholds, and calculations to adjust fishing mortality based on stock status. SAI Global concluded that the current harvest strategy is not designed to take into account the ecological role of Atlantic menhaden and is not responsive to the state of the menhaden stock with respect to its role in the ecosystem. Sadly, Riverkeeper disagrees with this approach because it is impossible to view the harvest of menhaden without considering their role in the food-web. To declare a fishery as sustainable without considering the impact to the ecosystem minimizes the express desire of this process and makes it more a marketing strategy than a science based decision. Furthermore, the New England Fishery Management Council, many of whose members are party to the ASMFC Menhaden Board, recently recommended the use of an ecosystem-based harvest control rule for Atlantic herring that accounts for its role as forage. MSC can and should urge ASMFC and the purse seine reduction fishery to support the development of a similar harvest strategy and corresponding control rules for menhaden.

Riverkeeper agrees with each of the three conditions noted by SAI Global regarding the implementation of harvest strategies and harvest control rules that take into consideration the ecological role of Atlantic menhaden and are responsive to the status of the stock. Pew also recommends that certain Recommendations by SAI Global be considered obligatory and not optional. Specifically, Riverkeeper strongly urges that bycatch studies be undertaken on an ongoing basis (Recommendation 1) and that enforcement and compliance information and data on the operations of the menhaden purse seine fleet be better recorded and reported publicly (Recommendation 4).

Menhaden population dynamics are believed to be heavily influenced by environmental drivers, though such factors have not been thoroughly explored scientifically. The few existing studies such as Houde *et al.* (2016)<sup>iv</sup> that have examined these topics have not been thoroughly considered by ASMFC in an attempt to factor them into management. A robust HCR should account for the influence of the environment, as well as fishing pressure, on menhaden, though it is believed it will be a long time before ASMFC is ready to take such a comprehensive approach. As a last point, there is little study that address the role of menhaden as forage or filter feeders, which may have tremendous consequences whether in Chesapeake Bay or in the Hudson River estuary.



## **Compliance:**

A core principle of the MSC's compliance with rules and best practices (Principle 3: Effective Management). MSC indicates that the "certified" fishery is subject to an effective management system that respects local, national and international laws and standards...<sup>v</sup> When the ASMFC adopted Amendment 3, it took precautionary action to protect what is the primary nursery for Atlantic menhaden, the Chesapeake Bay, from where the largest and most densely clustered catches originate. While the 2015 and 2017 stock assessments showed some signs of improvement for menhaden coastwide, there is no evidence of improvement in the Bay. Several Bay-specific menhaden trends are concerning (recruitment),<sup>vi</sup> many predators there show disturbing population trends, and there is no science to suggest any catch increase there is sustainable from either a single-species or ecosystem perspective.

Instead of embracing these modest changes, which may not have constrained catches by the reduction fishery there based on recent landings history,<sup>vii</sup> the Commonwealth of Virginia refused to pass implementing legislation after the reduction fishery advocated against it. While the ASFMC has not yet formally found the state out of compliance, this is another critical reason the MSC should not certify the fishery until the ASFMC passes ERPs and they are adopted by all states including Virginia.

## **Bycatch:**

The SAI Global MSC draft report (PCDR) outlines three principles that the fishery must meet in order to claim it is both sustainable and well managed. However, Riverkeeper is greatly is of the belief that the fishery does not meet those goals because the fishery's single-species based analysis of menhaden and less than credible reports of bycatch. There is concern that some commercial landings reported as menhaden may include river herring or shad.

Recommendation 1 under section 1.6 by the assessment team strongly recommends that bycatch studies be undertaken on an ongoing basis and that, in order to ensure comparability between studies, these future bycatch studies should be conducted in a more cohesive and standardized manner than has historically been the case. In addition every effort should be made to ensure that studies are designed in such a way that the composition of catches by weight can be estimated. Accordingly, SAI Global recognizes and acknowledges the need for bycatch studies and until they are fully implemented into any management plans or certification process, their discounted impact on various fisheries is just speculation that borders on divination.

Over the past two decades river herring have declined by 95 percent ASMFC (1999). In response, NYS and many other states long the Atlantic Coast have spent much taxpayer revenue in the form to expand critical freshwater habitat to augment the flagging populations of river herring and other diadromous species. The loss of these highly important species not only impacts our local ecosystem, it negatively affects the economic vitality of our region and potentially shuttles it elsewhere, especially when our fish, which are under a moratoria are





incidentally harvested as bycatch. The loss of these fish to bycatch when their population are deemed depleted potentially threatens the stability of their diminished populations and potentially explains why they are showing little to no recovery. **It has been acknowledged that commercial ocean harvest of river herring occurs as bycatch in other fisheries of various gear types: gillnet, bottom otter trawl, and menhaden purse seine ASMFC (1999).**

Consequently, Riverkeeper is greatly concerned that river herring and shad, which aggregate with menhaden may wind up harvested with little acknowledgment of the drawdown of their population, since there are no adequate safeguards to accurately report the data in the various fisheries that impact them. The ASMFC (2012) report states that uncertainty arises throughout the assessment process in the estimation of various quantities, including: catch (both landed and discarded), indices of abundance, trends in the indices, mortality rates, biological reference points, and population biomass. Estimates of total catch of river herring need to be improved through expanded observer and port sampling coverage to quantify additional sources of mortality, including bait fisheries and incidental catch in other fisheries. **Genetic analysis and other techniques are needed to determine population stock structure along the coast and to quantify which stocks are impacted by mixed stock fisheries (including bycatch fisheries); stock identity data (genetic data from fin clips) collection should be ongoing (ASMFC 2017).** The fate of river-specific stocks during marine migrations is still largely unknown as is the stock composition of river herring in bycatch of ocean fisheries. Moreover, the size and origin of river herring caught as bycatch from specific areas at sea have been difficult to determine due to the low frequency of large river herring catch events and the low monitoring levels during the times when river herring are encountered (Bethoney et al. 2013b; NEFMC 2013a).

The ASMFC (2012) identified factors adding to the uncertainty in the estimation of incidental catch of river herring and shad: 1) the error in identifying river herring by species, 2) unidentified category of incidental catch labeled herring NK (for not known), which also includes and the relative proportion of river herring in this category is unknown, 3) it is unknown how much of the estimated incidental catch also gets reported as landed catch, such that estimates of incidental catch may be biased high in certain years. All of this inability to accurately identify causes of mortality within a fishery while noting that bycatch is occurring should cause menhaden managers to proceed with caution since it is possible we could witness the disappearance of river herring while being so focused on menhaden.

The PCDR identifies contribution to total menhaden catches for each species in data from the NOAA observer program (2007 – 2012) and Kirkley (1995) and lists herring species as 0.024% of the total menhaden catch. This might not seem like a large percentage, but when interpreted with the understanding that river herring and shad remain in a depleted condition and their populations have been reduced by 95% or more, the 0.024% estimated in comparison to the largest east coast fishery is a large number that likely further threaten the stock of these imperiled fishes. Moreover, since there is no active monitoring of the menhaden catch, we rightly presume the number to be much greater than reported, especially when the ASMFC clearly warns that river



herring and shad tend to aggregate with other clupeids and much misidentification and uncertainty still abounds, which may lead to greater bycatch than reported.

### **Conclusion:**

The ASMFC has discussed the implementation of an ecosystems approach to manage and conserve menhaden for at least 15 years. They are now engaged in an unprecedented effort to develop ERPs to guide the future of menhaden management. It is unprecedented because it has not been developed for a fishery of this scale and for a species that is so ecologically, economically, and culturally important. The ASMFC's Menhaden Board decided in late 2017 to wait to shift to an ecosystem-based approach until menhaden-specific ERPs are available. If, based on SAI Global's assessment, MSC certifies the purse seine reduction fishery, it will be a blow to the progress of ASMFC, its many partners, and countless stakeholders. It will run counter to the over 158,000 public comments that ASMFC received in 2017 that urged that body to shift immediately to ecosystem-based management strategies until menhaden-specific ones are available will remove incentive that managers, scientists, and the conservation and fishing communities needed to ensure the reduction fishery accepts and adheres to menhaden-specific ERPs once they are ready. Overall, Riverkeeper vehemently disagrees with SAI Global's certification recommendation for the Atlantic menhaden reduction fishery at this time.

Lastly, Omega Protein had sent an armada of ships and spotter planes 275 miles from its home base in Virginia to ply New York waters for menhaden well within view of our beaches and in full view of whale watchers hailing from our ports. Omega boats dropped their nets and pulled some of "the most important fish in the sea" from our waters to fill their holds and their company's coffers, while whales and dolphins were actively feeding on them. By removing menhaden from our coastal waters, they are depriving whales and other cetaceans, which are our new celebrities and represent an economic boon to the region. A [blog post](#) and a [New York Times](#) article discuss ensuing conflicts that cause New Yorkers to resist and resent the presence of this foreign-owned fleet of boats mining New York waters at the expense of our ecosystem and our economics. As New Yorkers, we don't take kindly to those who plunder our ecosystem, rendering our resources into fish meal to sustain foreign, farmed fisheries and speciously state they are sustainably managed.

Legal or not, at Riverkeeper, we feel that Omega Protein, a foreign owned subsidiary of Cooke Inc. by extending their range and coming to our waters to mine for menhaden causes us to look beyond the Hudson, since their actions directly and indirectly impact a life force of our river. Riverkeeper has confidently stood up to economic giants before and has prevailed. With our powerful media voice and with the help of our broad constituency, we will continue to defend our waters and our ecosystem from all unfitting actions and threats. Now that Omega Protein is seeking to certify its harvest of Atlantic menhaden as sustainable to improve its market strategies, without utilizing ERPs and full implementation of safeguards to identify and prevent bycatch, we vehemently disagree with any designation that would declare the Atlantic menhaden



fishery as sustainable. Such certification at this time would violate the intent of SAI Global's three core principles and would undermine their credibility.

Sincerely,

A handwritten signature in black ink, appearing to read "George Jackman".

George Jackman, PhD  
Habitat Restoration Manager  
Riverkeeper, Inc.



## REFERENCES

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- <sup>i</sup> NEFMC (2018). [Atlantic Herring: Council Approves Amendment 8 With New ABC Control Rule, Buffer Zone; Asks NMFS to Set 2019 Specs.](#)
- <sup>ii</sup> MAFMC (2018). [2018 Mackerel, Squid, Butterfish Fishery Information Document.](#)
- <sup>iii</sup> Jacobs *et al.* (2009) [Influence of nutritional state on the progression and severity of mycobacteriosis in striped bass \*Morone saxatilis\*. \*Dis. Aquat. Organ.\*; Vol. 87\(3\): pp. 183-197.](#)
- <sup>iv</sup> Houde *et al.* (2016). [Factors affecting the abundance of age-0 Atlantic menhaden \(\*Brevoortia tyrannus\*\) in Chesapeake Bay. \*ICES Journal of Marine Science\*, 73: 2238–2251.](#)
- <sup>v</sup> MSC (31 Aug. 2018). [MSC Fisheries Standard Version 2.01.](#)
- <sup>vi</sup> Buchheister, A. *et al.* (21 Jan. 2016). [Spatial and temporal dynamics of Atlantic menhaden \(\*Brevoortia tyrannus\*\) recruitment in the Northwest Atlantic Ocean. \*ICES Journal of Marine Science\*.](#)
- <sup>vii</sup> ASMFC (2017). [Draft Amendment 3 to the Interstate Fishery Management Plan for Atlantic Menhaden For Public Comment](#); p. 72.