July 28, 2025

VIA EMAIL

Mr. John Clark, Chair
Menhaden Management Board
c/o Atlantic States Marine Fisheries Commission
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22201

RE: The Menhaden Work Group Report and Menhaden Technical Committee Tasking at the ASMFC Summer Meeting

Dear Chairman Clark:

In terms of the undoubted travails facing osprey in and around the Chesapeake Bay, there has been an inordinate amount of focus on menhaden generally, and the reduction fishery in particular. As the recent, record setting hypoxic zone in the upper and mainstem Chesapeake Bay,[1] coupled with the notable increase in the numbers of southern stocks like cobia, red drum, and Spanish mackerel, demonstrates,[2] the Bay is an ecosystem in the midst of change. While there is a tendency to look for easy answers, the likelihood is that there are a multitude of potential causes, as U.S. Geological Survey (USGS) osprey scientists recently pointed out.[3]

This tendency is apparent in the Menhaden Board's Atlantic Menhaden Work Group on Precautionary Management in Chesapeake Bay (Work Group) report. Rather than attempt to investigate the issue, the group charged forward with draconian management recommendations "without determining if there is or is not an adequate supply of menhaden to support predatory demand in the Bay." (Work Group Rpt., at 1.) Moving forward with such actions without investigating whether there are, in fact, fewer menhaden in the Bay or whether the fishery has

---

[1] Maryland Dept. of Nat. Res., "Chesapeake Bay Monitoring Shows Hypoxia Increased in June After Rainy May," (July 16, 2025), https://news.maryland.gov/dnr/2025/07/16/chesapeake-bay-monitoring-shows-hypoxia-increased-in-june-after-rainy-may/.

[2] Atl. Menhaden Work Group on Precautionary Mgmt. in Chesapeake Bay, "Precautionary Management in the Chesapeake Bay," ("Work Group Rpt."), at 17 (Apr. 23, 2025), https://asmfc.org/resources/management-technical-committee/atlantic-menhaden-work-group-report-on-chesapeake-bay-precautionary-management-april-2025//.

[3] Menhaden Fisheries Coal., "USGS Challenges Simple Narrative Linking Menhaden to Osprey Decline," (May 5, 2025), www.accessnewswire.com/newsroom/en/food-and-beverage-products/usgs-challenges-simple-narrative-linking-menhaden-to-osprey-decline-1023783.

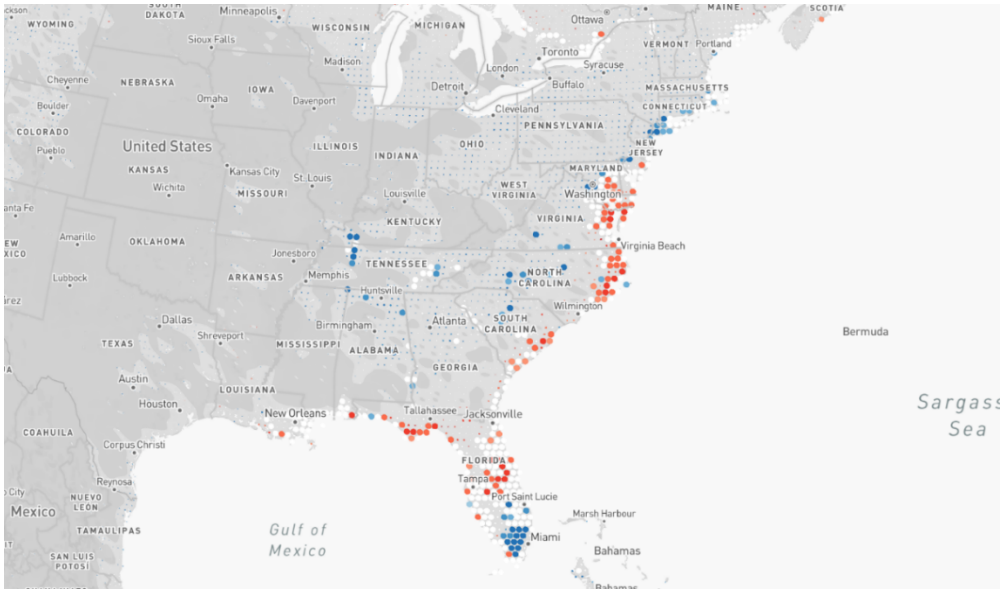
any impact on osprey, risks gravely impacting a more than a 150-year-old industry and hundreds of jobs while doing nothing to improve the osprey situation.

From the agenda for the Atlantic States Marine Fisheries Commission's (ASMFC) Summer Meeting, it appears that the Menhaden Board may be preparing to task the Technical Committee (TC) to investigate issues raised by the Work Group Report. The Board should be mindful that the TC already has a significant amount of work ahead of the Annual Meeting, such as bringing the bait catch-at-age up to date and preparing projections. That said, there are several areas of science upon which the TC can usefully provide insights which would be useful in helping the Board determine an appropriate course of action.

1. **Is the phenomenon of reduced osprey production confined to the times and areas in which the menhaden reduction fishery operates?**

When the USGS gave its presentation to the Menhaden Board at its 2024 Summer Meeting, Dr. Ziolkowski, Jr. and Dr. Rattner indicated recent declines in osprey populations in California, Washington, Massachusetts, Florida, and North Carolina (following, as in the Bay, significant increases). Only New Jersey showed recent increases.[4] That presentation also contained a graphic that used data from Cornell University's eBird database that shows a net decline of osprey abundance in the Chesapeake Bay and the Maryland and Virginia coasts between 2012-2022 and increases in interior regions. USGS, at 5.

On a broader scale, more recent data from the eBird database shows a similar trend from Delaware to the mid-Florida coast[5]:



[4] USGS, Osprey in the Chesapeake, Life History, Reproduction, Population, Diet and Stressors, at 6 (2024), https://asmfc.org/wp-content/uploads/2025/01/AtlanticMenhadenBoardPresentations_Aug2024.pdf.

[5] Cornell Lab of Ornithology, Osprey *Pandion haliaetus,* Trends 2012-2022, https://science.ebird.org/en/status-and-trends/species/osprey/trends-map.

Finally, Dr. Bryan Watts of the Center for Conservation Biology at William & Mary University recently issued a news advisory indicating a 90% decline in ospreys nesting along the seaside of the Virginia portion of the Delmarva Peninsula between 1987 and 2025.[6] According to the USGS, migrant osprey arrive in the region from late February to early March, and begin building nests from mid-March to Mid-April (USGS 2024). The menhaden reduction fishery historically has not begun fishing until the first Monday in May or later (and cannot, by law, fish in Virginia waters before then), raising a question as to how the fishery could be influencing osprey's months-earlier decisions about where they nest.

This information suggests a useful question for the TC to investigate:

- Is the most likely cause of large-scale shifts in osprey populations from parts of the Atlantic coastal region to interior riverine habitats the menhaden reduction fishery, or may climate change-induced environmental factors such as increased severe storms, excessive heat, changes in prey distribution, etc., be playing a role?

2. What other species of bird and fish in the Bay have significant dependence on menhaden and are those species showing signs of food stress in a manner similar to osprey?

Were there a decline in the number of menhaden inhabiting the Chesapeake Bay generally, or if the reduction fishery, operating at its current historically low levels, was adversely impacting osprey, it seems likely that other predators which depend on menhaden would likewise be affected. In this regard, the Work Group Report provides useful information.

While striped bass are typically referred to as "menhaden dependent," a stomach contents study conducted from 2002 to 2020 indicate that bay anchovy make up 33% of their diet by weight, with menhaden comprising just under 16%. Nonetheless, according to both the Virginia Marine Resources Commission (VMRC) and Maryland's Department of Natural Resources (DNR), indices "would indicate the [striped bass] are not starving and would be considered healthy."[7]

The Report also discusses food habit data for other populations of fish that are (or appear to be, based on fishery-dependent data) increasing in the Chesapeake, including cobia, red drum,

---

[6] Dr. Bryan Watts, News Advisory (June 16, 2025), https://ccbbirds.org/2025/06/16/osprey-population-along-the-seaside-of-the-delmarva-peninsula-has-collapsed/.

[7] Work Group Rpt., at 23. VMRC uses "Fulton's Condition Factor," as explained in the report. Maryland DNR has its "traffic light index," which makes relative judgements about various facets of the Bay's menhaden and striped bass population, including striped bass condition. MD DNR, "Traffic light index (TLI) of forage balance of Atlantic Menhaden and resident Striped Bass in Maryland's portion of Chesapeake Bay - update through 2024," https://dnr.maryland.gov/fisheries/Documents/TLI%202025%20update.pdf. Each index supports the Work Group Report's finding that striped bass "[c]onditions appear to be trending upward." (Work Group Rpt., at 23.)

spotted seatrout, and Spanish mackerel. (Work Group Rpt., at 36 (Table 5).) Of these species, only cobia does not appear to heavily rely on menhaden. By contrast, menhaden have been found to make up from between 9% to as much as 40% of the diet of red drum, spotted seatrout, and Spanish mackerel, by weight, depending on the life stage and area studied.[8] The growing population of blue catfish is not dependent on menhaden, but studies of adult catfish in the upper portions of Virginia major tributaries (James, York and Rappahannock Rivers) found menhaden comprised 0.425 to 5.00% of blue catfish diet by weight." (Work Group Rpt., at 22.)

Populations of weakfish and bluefish – both predator species included in the Ecological Reference Point model – are in decline in the Chesapeake Bay. Both these species, however, are far less dependent on menhaden than those that appear to be taking their place in this estuary. Food habits studies show that menhaden comprise just 5% of bluefish diet by weight, while the same figure for weakfish is less than 1% (although that is "possibly due to truncation of the weakfish size range associated with high natural mortality of Age 1+ fishes.").[9] Nonetheless, across the full suite of fish predators in the Bay, the Report concludes: "In general, the health index measured by Fulton's Condition Factor, seems to be slightly increasing or stable for all species, suggesting the health of these species over time has not changed substantially." (Work Group Rpt., at 23.)

Likewise, there have been increases in avian predators of menhaden. "Double-crested cormorants and brown pelicans are two additional predators of menhaden whose numbers are increasing in Chesapeake Bay. Atlantic menhaden make up 50-55% of the diet of cormorants and 74% of the diet of brown pelicans by weight." (Work Group Rpt., at 16.) The scale of the increases in the populations of these significant predators is detailed in the Report (pages 16-17), but the increases have been exponential.

The increases in populations of menhaden predators since at least the turn of the century suggests this line of inquiry:

- Is it more likely that ospreys are being outcompeted or or that the reduction fishery uniquely impacts osprey, even though it generally does not operate in areas where brooding success has been poor during the critical time-period in the breeding season?[10]

[8] Work Group Rpt., at 20-22. Few of these studies were undertaken in in the Chesapeake Bay, so these results should be interpreted with caution.

[9] Work Group Rpt., at 19-20.

[10] See Work Group Rpt., at 42-45.

3. What role might the increase in the population of bald eagles throughout the Chesapeake Bay region in recent declines of osprey?

Maryland DNR just published a release announcing large increases in the state's bald eagle population.[11] A myriad of studies have noted the relationship between bald eagles and osprey, often referring to eagles as "kleptoparasitic" for their tendency to attack hunting osprey to steal their food and prey on osprey adults, young, and eggs.[12] A recent study goes so far as to suggest that increasing eagle populations can have a "top-down" adverse impact on competitors, including osprey.[13]

This study looked at recovering populations of bald eagles, ospreys, and great blue herons that repatriated Voyageurs National Park in northern Minnesota during the mid-20th century. The authors found that "[i]ncreased numbers of eagles were associated with a reduction in the numbers of osprey nests, their nesting success and heronry size." The authors were unable to determine the exact top-down mechanisms resulting in this relationship, noting that osprey would nest in proximity to eagles. They surmise that ospreys "were likely impacted by eagles outside their local surroundings, including non-breeding individuals," through kleptoparasitism and predation.

Voyageurs National Park is a different type of ecosystem (freshwater lakes) than the Bay and it is apparent that, for a long period of time, each of these species increased their repatriation of the area in tandem. This suggests a possibility that a localized abundance of bald eagles can reach a tipping point after which they may be able to exert top-down effects on osprey. Notably, the USGS also noted issues of intraspecific competition between bald eagles and osprey in its presentation. (USGS 2024). There is significant scientific and anecdotal evidence of the dominant and adverse impacts eagles have on osprey, suggesting a reasonable line of inquiry would be:

- Can issues of competition and depredation be ruled out as a cause of osprey's lack of breeding success, given that (i) bald eagles are kleptoparasitic and known to be particularly aggressive with osprey; and (ii) there are increasing populations of other piscivorous bird and fish species in the Chesapeake Bayad?

---

[11] MD DNR, "A Soaring Success: Maryland's Bald Eagle Population Recovery" (July 3, 2025), https://news.maryland.gov/dnr/2025/07/03/a-soaring-success-marylands-bald-eagle-population-recovery/

[12] See, for example, Bierregaard, R. O., Poole, A. F., Martell, M. S., Pyle, P., & Patten, M. A. (2016). Osprey (*Pandion haliaetus),* version 2.0. In P. G. Rodewald (Ed.), *The birds of North America.* Ithaca, NY: Cornell Lab of Ornithology; Prevost, Y. A. (1977). *Feeding ecology of ospreys in Antigonish County, Nova Scotia.* Masters M.Sc., McGill University, Montreal, QC, Canada; Vennesland, R. G., & Butler, R. W. (2011). Great blue heron (*Ardea herodias),* version 2.0. In A. F. Poole (Ed.), *The birds of North America.* Ithaca, NY: Cornell Lab of Ornithology.

[13] Cruz, Jennyffer, et al. "Top-down effects of repatriating Bald Eagles hinder jointly recovering competitors." *Journal of Animal Ecology* 88.7 (2019): 1054-1065.

4. What role could climate change, water temperature, dissolved oxygen levels, shoreline hardening, and other environmental factors play in the local abundance of menhaden and other forage species?

Fisheries managers have grappled with the issue of climate change and its effects on fisheries and the ecosystem. Stocks are shifting—for example the noted increase in red drum and Spanish mackerel in the Chesapeake Bay. Waters are warming. Storms are becoming more frequent and more destructive. The timing of migration for many species is changing.[14] All these impacts are well recognized and the subject of intense study.

As noted above, significant portions of the Chesapeake Bay were subject to extremely low dissolved oxygen in the critical rearing season for young osprey (June and July) this year and last. In 2023, the Forage Action Team (part of the NOAA Chesapeake Bay Program) found that "that the abundance of key forage species decreases when 10 to 30% of the shoreline is hardened."[15] As it is so shallow, the Bay is particularly vulnerable to warming, and the impacts of more frequent, and intense storms (as well as sea level rise).[16] Any or all of these factors can influence the local distribution of forage within the Bay, as well as foraging success.

Thus, the Technical Committee could be asked to consider the following question (while recognizing that this line of inquiry is wide-ranging, intensive, and may not lead to definitive answers):

- Noting that Watts (2024) found that deliveries of all forage species to osprey nests declined steadily from 1974 to 2021,[17] is it possible, or even likely, that ospreys' apparent lack of foraging success is tied to changes in local conditions that are impacting either local abundance of forage or osprey's hunting success?

---

[14] See, for example, Peer, A. C., and T. J. Miller. "Climate change, migration phenology, and fisheries management interact with unanticipated consequences." *North American Journal of Fisheries Management* 34.1 (2014): 94-110; Crear, Daniel P., et al. "Estimating shifts in phenology and habitat use of cobia in Chesapeake Bay under climate change." *Frontiers in Marine Science* 7 (2020): 579135; Wood, Robert J., Donald F. Boesch, and Victor S. Kennedy. "Future consequences of climate change for the Chesapeake Bay ecosystem and its fisheries." *American Fisheries Society Symposium*. Vol. 32. 2002.

[15] NOAA CBP, Forage Action Team, "Forage Status and Trends Report for the Chesapeake Bay," at 17 (Nov. 2023), https://www.chesapeakebay.net/what/publications/forage-status-and-trends-report.

[16] See, for example, Rezaie, Ali Mohammad, et al. "Quantifying the impacts of storm surge, sea level rise, and potential reduction and changes in wetlands in coastal areas of the Chesapeake Bay region." *Natural Hazards Review* 22.4 (2021): 04021044; St. Laurent, Kari A., Victoria J. Coles, and Raleigh R. Hood. "Climate extremes and variability surrounding Chesapeake Bay: Past, present, and future." *JAWRA Journal of the American Water Resources Association* 58.6 (2022): 826-854; Du, Jiabi, et al. "Worsened physical condition due to climate change contributes to the increasing hypoxia in Chesapeake Bay." *Science of the Total Environment* 630 (2018): 707-717.

[17] Watts, Bryan D., et al. "Demographic response of osprey within the lower Chesapeake Bay to fluctuations in menhaden stock." *Frontiers in Marine Science* 10 (2024): 1284462. Notably, menhaden comprised a higher percentage of delivers in 2021 compared to 2006-07, albeit at a lower absolute rate.

# # # #

The commission must be guided by science. Precipitous actions, taken in the name of precaution, are not always harmless. Neither Ocean Harvesters nor Omega Protein can survive without the current low level of access to the menhaden resource in the Bay. There simply are not enough "fishable days" – that is, days where the weather and sea conditions allow vessels to operate – in a year to safely conduct a profitable fishery solely in the ocean.

The menhaden fishery is managed in the most conservative manner in its 150 year or so history, and the reduction fishery is operating at its lowest sustained levels – in the Bay and overall – for as long as we have reliable records (*i.e.*, since the 1950s). Precaution is already the policy. Before taking actions that could cause irreversible economic harm to this historic fishery, the Board should ensure that all reasonable avenues of inquiry into the issues facing osprey are explored. Thank you for your time and attention.

Sincerely,

Peter Himchak
Senior Scientific Advisor, Omega Protein Corp.