

FOOD SUPPLEMENTATION INCREASES REPRODUCTIVE PERFORMANCE OF OSPREYS  
IN THE LOWER CHESAPEAKE BAY

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ABSTRACT.--The Atlantic States Marine Fisheries Commission (ASMFC), the governing body responsible for managing fisheries on the U.S. East Coast, formally adopted the use of Ecological Reference Points (ERPs) for Atlantic menhaden, *Brevoortia tyrannus*. Scientists and stakeholders have long recognized the importance of menhaden and predators such as ospreys, *Pandion haliaetus*, that support the valuable ecotourism industry and hold cultural significance. Landings in the reduction fishery are at their lowest levels and menhaden is facing potential localized depletion. Mobjack Bay, located within the lower Chesapeake Bay, has been a focus of Osprey research since 1970 and represents a barometer for the relationship between Osprey breeding performance and menhaden availability. Since local levels of menhaden abundance were not available, we conducted a supplemental feeding experiment on osprey pairs during the 2021 breeding season. Our main objective was to determine if the delivery rate of menhaden had an influence on nest success and productivity. Nest success ( $\chi^2 = 5.5$ ,  $df = 1$ ,  $P = 0.02$ ) and productivity ( $\beta = 0.88$ ,  $SE = 0.45$ ,  $CI = 0.049, 1.825$ ,  $P = 0.048$ ) were significantly higher within the treatment group. Reproductive rates within the control group were low and unsustainable suggesting that current menhaden availability is too low to support a demographically stable Osprey population.

**Supplemental Information (Definitions & Conclusions):**

- ASMFC defined localized depletion in Chesapeake Bay “as a reduction in menhaden population density below the level of abundance that is sufficient to maintain its basic ecological, economic, and social/cultural functions” (Annis et al. 2009).
- Ecosystem Based Fisheries Management evolves when ERPs are consistently monitored (Pikitch et. al. 2004). According to Amendment 3 of the Interstate Fishery Management Plan (FMP) for Atlantic menhaden (Southeast Data Assessment and Review [SEDAR] 2020, Anstead et al. 2021), ERPs are described as “a method to assess the status of menhaden not only with regard to the sustainability of human harvest, but also with the

regard to their interaction with predators and the status of other prey species.” The ERP working group is tasked with developing ERPs that are menhaden-specific that can account for the abundance of menhaden and their species role as a forage fish (Amendment 3 to the FMP, Anstead et al. 2021). Ospreys are a non-fish predator and can serve this role which can allow management to practice informed decisions to develop harvest targets, assess menhaden’s role as prey for upper trophic levels, and advance an ecosystem approach to fisheries management (EAFM) which considers multiple components of the ecosystem than just the target species (Patrick and Link 2015). The menhaden population within Mobjack Bay is not currently adequate to sustain the osprey breeding population.

## **LITERATURE CITED**

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