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Consider the Oyster. Consider Us.

Every winter, I have long cherished the tradition of sharing oysters with my family. With the perfect balance of salt and sweet, oysters have always been the star of the show at our dinner table. We tasted Gulf Oysters from New Orleans, boasting a bold, salty flavor and a firm texture, and Glidden Point Oysters from Maine, with a briny, crisp, and clean ocean flavor. But nothing matches Eastern Oysters from the Chesapeake Bay. They taste fresh and balanced, carrying the familiar salt and richness of the Bay, with just enough sweetness to make them unforgettable. As an oyster-lover, I didn't think about ecosystems or water quality or how delicate that flavor was. I only knew the pleasure of eating them, never imagining that the oysters themselves were at risk.

We praise the oyster for everything it does: filtering 50 gallons of water in a day, providing a tasty meal, and holding ecosystems together. In environmental conversations, the oyster is a solution, a natural technology that returns clarity to clouded bays. In the Chesapeake Bay alone, oysters remove nitrogen equal to 20,000 bags of fertilizer each year, an ecological service that would cost us more than $1.7 million to replicate [1]. When oyster reefs are formed through individual oysters growing atop one another, they protect shorelines from erosion and become homes to other filter feeders like barnacles, bryozoans, sea anemones, and hooked mussels [2]. Without oysters, ecosystems falter.

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Oysters present us with many gifts, but they also convey subtle warnings. Every layer of the oyster's shell is a record of harm, an archive of the waters it endures. An oyster builds its shell gradually, extracting calcium carbonate from the water [3]. Through this process, its body becomes a timeline of human impact. When scientists from the University of Alabama examined nutrient levels in Bay oyster shells from an archeological site dating back to 1250 BC, they found that humans have been polluting the Chesapeake Bay since the early 19th century. The population in the region tripled between 1830 and 1880, resulting in over 80% of the forests surrounding the Bay being cleared and the nitrogen content in the waters increasing exponentially to the present day [4]. The oysters recorded every shift, documenting the escalation of human impact long before we were willing to measure it ourselves.

Even today, the oyster shell records human influence, in layers of calcium carbonate and plastic fragments. As an oyster grows, it seals minerals into its shell and also accumulates what we release into its world, one of which is microplastics. A 2015 survey of four tidal tributaries to the Bay found microplastics in all 60 samples of various marine organisms including oysters, with higher concentrations near urban areas [5]. Microplastics drift through the water like algae, the oyster's preferred food, making it almost impossible to avoid. In oysters specifically, researchers have found 104 to 140 microplastic particles per oyster, a number higher than in other bivalves [6].

Beyond microplastics, the oysters carry the environmental choices we make. Laboratory analyses released by the nonprofit group Public Employees for Environmental Responsibility

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(PEER) have found per-and polyfluoroalkyl substances (PFAS), also known as “forever chemicals,” in oysters from the Chesapeake Bay. PFAS are a group of more than 8,000 chemical compounds used in nonstick cookware, flame retardants, water-repellent clothing, and stain-resistant furniture [7]. The environmental threat is that they do not break down in the environment and spread easily through water, building up in organisms that ingest them, including us. Oysters with PFAS are a danger to public health because PFAS often leads to birth defects, damage to the liver and kidneys, and greater cancer risk, so protecting oysters from PFAS is essential not just for the oyster population, but also for us who enjoy oysters.

In the accumulation of harm emerges a clear message: the oyster cannot repair what we refuse to change. Its filtration can clean waters, its reefs provide shelter, and its very presence can stabilize ecosystems, but oysters cannot outrun the constant harm we pour into their world. Restoring and maintaining oyster populations require deliberate effort but is important for improving the water quality of the Chesapeake Bay, helping other Bay organisms, and for all oyster lovers. Each empty Chesapeake oyster shell would be a reminder of our responsibility to consider and protect the oysters and their ecosystem that ultimately sustains us.

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