U.S. Fish & Wildlife Service

Chesapeake Bay Field Office

Chesapeake Bay Oyster Reef Habitat Initiative

White-winged scoter. USFWS photo

The U.S. Fish and Wildlife Service (Service) views oyster (*Crassostrea virginica*) reef restoration in the Chesapeake Bay as an essential part of our core mission to conserve, protect, and enhance the region's fish, wildlife, plants, and their habitats for the continuing benefit of the American people. The oyster a keystone species for the Chesapeake Bay because of its unique ability to continuously build extensive three-dimensional reef habitat that include a diverse and productive community of fish, wintering waterfowl, crabs, mussels and other invertebrates.

Oyster Reef As Habitat

Many Service Trust fish species, such as striped bass (*Morone saxatilis*) and Atlantic sturgeon (*Acipenser oxyrhynchus*) use oyster reefs as habitat for feeding and refuge. Migratory waterfowl, a vital commodity in the Bay, such as black, surf and white-winged scoters (directly benefit from oyster reefs with much of their winter diet consisting of hooked mussels (*Ischadium recurvum*), a species closely associated with oyster reefs in the Chesapeake Bay. Researchers found that the restored oyster reefs are colonized by large densities of hooked mussels and many other species. The multitude of life inhabiting these restored oyster reefs serve as a significant prey source for wintering scoters.

Improving Water Quality

In addition to the direct benefits to fish and wildlife resources, there are many indirect benefits associated with restoring oyster reef habitat including water quality, shoreline stabilization, and carbon sequestration. Oysters filter water improving its quality around the oyster reef. Not only do the oysters filter the water column, but the high densities of mussels colonizing these reefs are additional biofilters.

This water quality improvement benefits submerged aquatic vegetation (SAV) beds. The SAV beds in turn serve as refuge and nursery habitat for many other fish species and feeding grounds for migratory waterfowl. Oyster reefs can also play a vital role in adapting to climate change in the Bay. The reefs themselves help to stabilize shorelines and mitigate some of the impacts of sea level rise. Oyster reefs also work as a carbon sinks, improving the Bay's capacity to absorb excess CO2 from the atmosphere.

Restoring Oyster Reef Habitat

Historically, the oyster has been the cornerstone of the natural reef ecosystem in the Chesapeake Bay. Decades of overharvest, habitat destruction, disease, and poor water quality have reduced the population of oysters in the Chesapeake Bay to less than 1 percent of its historic levels. An estimated 70 percent of the 450,000 acres of historic oyster bar habitat in the Bay has been lost to siltation during the last 100 years and less than 1% is classified as clean.

Restoring oyster reef habitat is essential to restoring ecosystem function. Oysters tend to recruit best on living oyster shell. Unfortunately, oyster shell availability for habitat restoration is extremely limited. Because oyster shell is so limited, creative solutions for restoring oyster reef function are necessary. Restoration using artificial materials like reef balls or granite has shown promise in recent years. We expect diverse

Eastern Oyster (*Crassostrea virginica*)
USFWS photo

communities established on artificial materials can serve as reasonable and functional surrogate for traditional oyster restoration.

On May 12, 2009, President Obama issued Executive Order 13508, recognizing the Chesapeake Bay as a national treasure and calling on the federal government to lead a renewed effort to restore and protect the nation's largest estuary and its watershed. As part of our support of this Executive Order, the Service will implement native oyster reef restoration in the Chesapeake Bay. There are many key players involved in a comprehensive Bay-wide strategy to restore native oysters to the Bay. It is our intention to strongly support those efforts focusing on sites and oyster reef habitat restoration projects that will maximize benefits to fish and wildlife resources.

Oyster Reef Restoration Goals

- Identify and promote oyster reef system benefits with emphasis on habitat for anadromous fish, migratory birds, and endangered species and direct benefits to the National Wildlife Refuge System.
- Use the best science available to coordinate integrated restoration efforts with clearly defined ecological goals and criteria for success.
- Choose techniques and locations that will maximize ecological function and sustainability of reef function over time.
- Develop monitoring techniques that will measure success of restoration projects.
- Collect and share data which demonstrates our level of success in oyster restoration.
- Target areas and restoration techniques that will discourage poaching.
- Support widespread compliance of oyster fishery regulation by effective enforcement.
- Develop partnerships with federal, state, academic, non-government organizations, recreational fishermen, watermen, and the aquaculture industry to identify sustainable practices that can provide benefits to fish and wildlife habitats, while achieving mutual goals.
- Develop an outreach strategy to engage the public in the importance of reef ecology and reef habitat restoration in the Chesapeake Bay.

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