

Sanctuary vs. Harvest Grounds

by David Schulte, oceanographer, U.S. Army Corps of Engineers

What are harvest grounds?

Harvest grounds are any area where oysters naturally grow and watermen – a local term for Chesapeake Bay commercial fishermen – tong or dredge oysters.

When commercial fishing for oysters began in the early 1800's, harvest grounds became an integral part of the commercial oyster fishery. The last such naturally- occurring areas were discovered by watermen in the 1870's in deep waters of Tangier and Pocomoke Sound. Since the last harvest areas were discovered, all natural oyster reefs were subject to commercial fishing. Harvest grounds, which have been built in Maryland since the late 1920's and in Virginia since 1931, are currently known as "rotational harvest areas."

What are sanctuaries?

Sanctuaries are reefs that were previously harvested for oysters, but have been restored and are now closed to harvest indefinitely.

Sanctuaries, also called marine protected areas, are commonly used to enhance reproduction and survival of over-fished animals in the marine environment all over the world. These oyster sanctuaries function similarly in the Chesapeake Bay, allowing the oyster population to recover and form new reefs.

Sanctuaries are meant to be permanent, as harvesting for oysters damages the reefs. The first sanctuaries took shape in the 1990's with federal funds.

Sanctuary reefs allow oysters to form natural (cohesive) reefs where oysters, living at high densities, form an interconnected mass of shell. Such reefs are much less vulnerable to predators such as cow-nose rays.

The protected habitat also allows all-natural selection for disease-resistance to proceed. The practice of routinely fishing out large oysters, which are the ones that have survived disease, slows down disease-resistance development.)

The ecological benefits of sanctuary reefs include enhanced fish, water bird, and shellfish (blue crab) production; and improved water quality through water filtration and sediment stability. The reefs sequester carbon in their calcium carbonate shells, improving the bay's ability to absorb excess carbon dioxide from the atmosphere, and naturally stabilize shorelines with low, intertidal oyster reefs.

Sanctuary reefs also encourage enhanced recruitment, which means larva from an adult oyster attaches itself to a hard surface and grows. This has allowed for increased commercial harvests on nearby oyster grounds, benefitting commercial oyster fisheries.

What is repletion?

Repletion is the addition of new shells (often dredged from buried deposits or from oyster or clam shucking houses) to harvested oyster reefs.

It also includes the moving and planting of young oysters, called spat or seed oysters, from areas of high recruitment to an area with low recruitment. Alternatively, it may involve placing hatchery-grown spat onto a harvested ground.

Moving oysters from high to low areas is a common practice that improves harvests near heavy fishing areas, or from areas of higher disease, which often have higher recruitment, to areas of lower disease, which often have poor recruitment, in order to grow the spat to market size.

The repletion program is a “put-and-take” fishery. Virginia established its oyster repletion program in 1931, which was initially operated with funds derived from taxes on the commercial oyster industry.

Since 1947, state general funds and, periodically, federal taxpayer funds have supplemented the repletion program.

Has the Army Corps funded repletion?

Yes. The early oyster reef efforts in the Rappahannock River in 2000 and Tangier Sound in 2002 and 2003 were primarily repletion, with harvest acre to sanctuary acre ratio of 25-to-1. These harvest grounds are now part of the state’s rotational harvest operation.

Why did the Army Corps stop funding repletion?

Harvesting removes market-sized oysters and kills young oysters.

The young oysters, attached to market-sized adult oysters, are removed from reef. Tongs and dredges also kill the young oysters by breaking their shells.

Corps’ data from poached reefs indicates about half of the sub-market oysters are removed or killed during commercial harvesting. Poachers also remove the shell used to build the reef.

Just one harvest season can severely damage a restored reef area and most need repair (repletion) after just one season. Because the increasing and ongoing maintenance costs to

operate harvest grounds, and the commitments made in Executive Order 13508, Chesapeake Bay Protection and Restoration, the Corps does not support building harvest grounds.

Corps data showed that a repletion-only funding scenario would hinder oyster-population recovery and disease-resistance development.

Data also revealed that the repletion effort to produce a bushel of oysters has increased exponentially since the outbreak of Dermo disease in the 1980s and remains high.

Repletion appears to be a short-term, unsustainable effort which does not provide for long-term ecological recovery of the oyster and Chesapeake Bay. There is no evidence that oyster harvest areas have ever been sustainable because oyster populations cannot repair the damage.

Is the performance of sanctuaries different from harvest grounds?

Yes.

The Corps monitors constructed sanctuary projects and harvest ground projects, and oyster restoration projects, which include repletion/rotational harvest areas, typically last only a few years before negative trends are noted and failure typically occurs, on average, in five years.

The difference between the two is how many oysters are on the reef and how much available brown (oxic) shell is available for oyster larvae to settle on.

The Corps has data on two projects, one repletion project and one sanctuary project.

The Tangier and Pocomoke Sound repletion project first consisted of 150 acres of low-relief reef harvest grounds and eight sanctuaries. Today, most of the harvest grounds built by the Corps in Tangier and Pocomoke Sound consist of fine shell grit, with few live oysters present.

The Great Wicomico sanctuary project first consisted of 95 acres of restored reef habitat but is about 75 acres today. (Subsidence and sedimentation of low-relief reef areas caused the Great Wicomico River acreage loss, but the high-relief reefs and a significant portion of the low-relief reefs still remain today.)

A reef's lifespan is approximately five years, but the Corps' sanctuary reefs in the Great Wicomico River are nine years old and the Corps shows that the reefs are healthy and growing.