ALLIANCE FOR THE CHESAPEAKE BAY
BAY JOURNAL

Scientists hope to get Bay's oyster restoration rolling with reef balls

In one Bay experiment, the spheres had become so overgrown with oysters and colonizing organisms in just one they had nearly become unrecogn

By Karl Blankenship

Faced with a declining supply of oyster shells and an increasing demand for oyster reefs, scientists are exploring a new way to provide habitat: prefabricated oyster homes.

The homes in this case are "reef balls" made from concrete poured into fiberglass molds. When popped from the molds and placed on the Bay's bottom, they provide a raised, solid surface on which oyster larvae, or "spat," can attach and grow.

"The big picture idea is to explore alternatives to dredge shell for reef construction," said Stephanie Reynolds, a fisheries scientist with the Chesapeake Bay Foundation, which is conducting experiments to see how hospitable reef balls are for oysters.

Restoring oyster habitat has been a goal of the Bay Program, but the primary building block for oyster reefs—oyster shell—is in short supply. With oyster populations near a record low, little new oyster shell is being produced.

As a result, most oyster restoration projects have been built on reefs made with ancient, buried shells dredged from under the bottom of the Bay. But that supply is likely to come to an end because of concerns over the environmental impact of the dredging operation.

"It's been clear for a while that that was not going to be enough shell to get to the scale we wanted to get to with native oyster restoration," Reynolds said. "We were going to need other alternatives besides just dredged shell."

What's unclear, though, is how big a role reef balls will play in meeting that need.

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Most work with alternate reef material has been aimed at improving fish habitat. Parts of bridges, piers—even Baltimore's old Memorial Stadium—have been put in the Bay as fishing reefs. The debris provides solid surfaces t mussels, clams, barnacles and vegetation, and also have cracks and holes to provide hiding places for small crabs and fish. T attracts larger fish—artificial reefs have long been popular fishing sites for anglers.

In recent years, reef balls were added to the mix. The creation of a Georgia-based nonprofit organization, the Reef Ball Founc balls are specifically designed to enhance aquatic habitats. The balls—used in restoration projects around the world—are hollc center, with holes that allow marine life to move in and out.

"They have a larger surface area," said Thomas Humbles, of Maryland Environmental Services, which oversees almost all of t construction in the state. "The equivalent weight of a reef ball has much more surface area than if you just put a chunk of cor water. It's got the inside and the holes."

Since 2002, the MES, which purchased molds from the Reef Ball Foundation, has overseen the placement of more than 600 b
state's portion of the Bay.

Most of those sites have been in areas too deep to serve as oyster habitat, often in water 25 feet or deeper. Still, the balls at
benthic-dwelling organisms such as vegetation, barnacles and clams, and occasionally even a few oysters.

That spurred interest in using reef balls for oyster restoration projects. Dozens of balls were cast and placed in the Bay in the
oyster restoration in recent years.

But, they didn't always have the desired effect, said Rich Takacs, of the National Oceanic and Atmospheric Administration's R
Center, which has funded some of the projects and performed much of the monitoring.

"I was noticing that there was not a lot of oyster settlement on these reef balls, even where some of these other alternative s
oyster settlement on them," he said.

What was lacking, he said, was a critical evaluation of how reef balls perform. "All the restoration that we are doing right now
to make science-based by evaluating it," Takacs said.

That led to a pair of CBF projects, supported by NOAA, the MES and the Fish America Foundation.

Last fall, the environmental group placed 69 balls in a designated sanctuary, the Hollicuts Noose reef site in Eastern Bay. Befo
the water, though, 30 of the balls were placed in tanks filled with oyster larvae. After the larvae set on the balls, they went in

This fall, several balls were hoisted out and examined. The oysters, which averaged 13 millimeters across when placed in the
grown to an average size of more than 53 mm, Reynolds said, and oysters covered about 90 percent of the surface of the bal
received oyster spat.

In just a year, she said, the balls had become so overgrown with oysters and colonizing organisms that they had nearly beco
unrecognizable as reef balls.

"At this point, it's an oyster restoration success in the sense that we put more oysters out there and they seem to be doing gr
year," Reynolds said.

But some questions remain. The balls that did not have larvae before going into the water sill had no oysters growing on them
said it's not clear why the oysters weren't present, although it's possible there was no natural oyster "spat set" in the area thi

A second project is aimed at assessing whether using different materials in reef ball construction can improve oyster spat sets
project, the concrete for different balls is mixed with various ingredients, such as bits of oyster shell, as well as rocks and peb
different sizes, and marl (a marine limestone)—to see if there is a difference in attracting spat.

"It seems that they set much better on the shell fragments, and they set the second best on the marl, and third best—though
badly—on the pea gravel," Reynolds said. "So we are still doing a lot of different experimentation to figure out what does and
and what works best on reef balls."

More follow-up is planned for both projects to determine how much of a role reef balls might play in Chesapeake oyster resto

"The long-term benefit I'm hoping to get out of this is understanding whether reef balls are a viable option for scaling up this
Reynolds said. "We haven't tried everything in terms of the native oyster restoration effort. I think it is pretty important that
all of the reasonable possibilities for the native oyster before someone decides that it is time to give up."

One limiting factor for future use is the shape of the reef balls themselves. Their shape and size can make oyster harvesting d

damage dredges. Originally, the CBF project was to go in the South River, but was moved to a designated oyster sanctuary ir after some watermen worried they could pose problems at the proposed site.

That means the use of reef balls is likely to be limited to permanent oyster sanctuaries. In those areas, their structure can pr added benefit by preventing poaching, which is sometimes a problem at sanctuaries.

"It's not the panacea for all, but it gives us another tool to use for oyster restoration," Takacs said. "It's probably going to be site-specific basis."

Karl is the Editor of the Bay Journal.

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