

## Review of past oyster research reveals lack of coordination

### Scientists say future projects should require pre-assessment and post-evaluation components

By Karl Blankenship

A group of scientists recently reviewed the results from hundreds of oyster restoration projects that took place over the last 18 years. They found a lot less than they expected.

Instead of being able to draw conclusions about the lessons learned after examining records from more than 1,000 projects that took place between 1990 and 2007, they found a mishmash of information.

Many projects received little monitoring, and many sites that were monitored collected information that often wasn't useful.

"I think the early thoughts that there was a ton of data that could easily be analyzed fell by the wayside pretty quickly as we started to look at the data," said Jonathan Kramer, director of the Maryland Sea Grant College Program.

"I think one of the big lessons learned is if you want to do it better, you have to coordinate a lot better than what was done in the past," he said.

Kramer was a facilitator for a review by a six-member Oyster Restoration Evaluation Team drawn from the Bay scientific community. With millions of dollars being spent on oyster restoration annually, the goal of the team was to assemble and analyze information from past projects that could be useful in guiding future efforts.

Instead, a major conclusion of the team was that "wholesale change is necessary to design and implement sound stock assessment and monitoring protocols and procedures in order to fully assess the health and growth of a recovering oyster population."

During the study period, at least a dozen agencies and organizations engaged in some type of restoration activity. These ranged from building reefs with oyster shell or other materials to promoting the settlement of oyster larvae, or "spat"; planting hatchery seed or transplanting wild seed to areas where survival may be greater; cleaning existing oyster bars; and other actions.

But the team found that activities such as seed planting often took place with little or no monitoring. Where monitoring took place, different information was often collected from project to project, making comparisons difficult or impossible.

Often, the goal of projects-whether they were to support harvest or provide ecological services-were never clearly identified. As a result, important data about demographic and habitat changes were never collected.

The long-term evaluation of many restoration sites was impossible because they were often opened to harvest. Many sites that were restored specifically to promote harvest were never examined to see whether those efforts were effective.

Because of poor or inconsistent monitoring, when projects failed it was often difficult to determine whether such factors as sedimentation or the proliferation of fouling organisms were causes.

Further, projects were rarely replicated in different habitats, making evaluation difficult.

Such shortfalls, the report said, "severely hampers our ability to evaluate the effectiveness of restoration over the study period."

Monitoring has been shortchanged in part because the work is "onerous" and "unglamorous," and agencies or organizations paying for projects are often more interested in getting projects in the water, said Roger Mann, director of Research and Advisory Services at the Virginia Institute of Marine Science, and a member of the review team.

"There is almost no point in starting this thing unless you are going to follow through and understand what you did and didn't do," he said. "One could continue to spend millions of dollars on this and make no progress at all."

He and others said regulatory and funding agencies need to take a greater role in requiring consistent data collection methodology and follow-up monitoring, although team members acknowledged that Baywide coordination is difficult.

"There is no czar," said Victor Kennedy, a professor with the University of Maryland Center for Environmental Science and a member of the review team.

Many agencies face competing political pressures, and in the past, Kennedy said, agencies were often driven by the notion that they "had to do something," whether it was placing shell for habitat or spreading oyster seed.

"But it wasn't necessarily done in the most sensible or rigorous way, and it often wasn't evaluated," he said. "I think the folks in the Maryland and Virginia state agencies are very concerned with doing it right. It all depends on how much funds they've got."

The report said future projects should clearly separate oyster reef restoration for ecological services from those projects aimed primarily at maintaining fisheries.

It also said restoration projects need to be better coordinated throughout the Bay to help identify where projects should take place and to identify goals by which they could measure success. For instance, is the project intended to produce large oysters? Or will an abundance of smaller oysters provide the desired ecosystem benefits such as increased reef habitat, which also benefits other species?

The report was completed by Maryland Sea Grant. It was funded by the National Oceanic and Atmospheric Administration's Chesapeake Bay Office, the U.S. Fish and Wildlife Service and the Keith Campbell Foundation for the Environment.

Peyton Robertson, director of NOAA's Chesapeake Bay Office, said the report indicates a clear need for agencies that fund oyster restoration to improve their coordination and oversight.

"Many hands make light work," he said, "but let's try to coordinate those efforts so we are maximizing the strengths and capabilities of each of the agencies that are involved with the effort."

He said the report recommendations would help guide future monitoring requirements for projects, such as requiring consistent methodologies for collecting data, that are funded by NOAA and likely other agencies as well.

"Going forward, for the restoration projects that NOAA funds, we will absolutely make sure that there is both pre-assessment work to evaluate the potential sites and then post-implementation evaluation to determine the extent to which they have long-term viability," Robertson said.

Fully implementing recommendations from the report would require a "big commitment" because it changes the way programs have operated, Kramer said. "Oyster restoration is not easy. It is very, very tough stuff," he said. "But this, I think, will at least point us in some directions we need to consider."

*The report, "Native Oyster (Crassostrea virginica) Restoration in Maryland and Virginia: An Evaluation*

*of Lessons Learned 1990-2007," is available on the Maryland Sea Grant website [www.mdsg.umd.edu](http://www.mdsg.umd.edu).*

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