



Chesapeake Angler's Notebook

CHESAPEAKE FISH LOVE LIVE BOTTOM

Severn & Choptank Rivers, Maryland
May 31 & June 6, 2012

Captains Karl Willey and Dan Johannes smiled when they saw the sonar images from my skiff. After all, they had planted most of the oysters in those images, some fifteen million spat-on-shell babies placed onto the Severn River's three-acre Asquith Reef with CBF's 60-foot oyster restoration workboat, *Patricia Campbell*, over the past four years.

Some of those babies are brand-new, but the oldest are now approaching five inches in length, and their reef hosts a huge variety of associated Bay critters, including anemones; marine worms; sponges; small crustaceans like barnacles, amphipods, grass shrimp, and mud crabs; and tiny fish like naked gobies and striped blennies. This community has attracted blue crabs of various sizes, croakers, spot, thick white perch from eight to twelve inches, and a horde of hungry seven-to-ten inch rockfish, all from the large 2011 year class. On that day, the puppy rockfish and the white perch had lit up the sonar everywhere I looked on Asquith and several of its sister reefs down the river. The fish clearly preferred these restoration sites over other areas of the river.



Note the location of the boat on the Asquith Reef in the GPS plotter screen at left, and the school of fish on the rough, uneven surface of the reef in the sonar image on the right. The truth is that the Severn wasn't in great shape then. Runoff from 2011's heavy rains was taking its nasty toll. After an early May algae bloom--fueled by nitrogen pollution from those rains--had died out, the remains of those quadrillions of microscopic plants had drifted down to the river's bottom. There, the river's benthic (on-bottom) bacteria were breaking them down (decaying them), using up oxygen in the process and thus creating a dead zone that showed on the sonar.

When I ran a salinity/temperature/dissolved oxygen profile in the deep hole off the mouth of Chase Creek, the picture came clear. A warm spell of weather had raised the temperature of the river's surface water, making it less dense than the cooler bottom water. This "stratification" of the water column meant that there would be little exchange between upper and lower layers, effectively clamping a lid on the system while the decay bacteria at the bottom were using up the oxygen there.

As a result, the Severn’s oxygen fell to lethal levels (below 3 milligrams per liter) at around 16 feet and tailed off to near zero at the bottom. The sonar, which is extremely sensitive, showed empty water below that depth both there and in other parts of the river

That’s why I got so excited about what the machine showed on the Asquith Reef. It was striking that the rockfish and perch displayed a clear preference for the reef, which lies in 10-18-feet of water. What the fish seemed to be keying in on was a habitat zone that combined three specific environmental factors: cool water temperature, adequate dissolved oxygen, and the “live bottom”

Note in this four-panel location of the boat on the Reef in the lower left, the baitfish suspended at the preferred depth off the the reef in the detailed frequency panel on the top and the larger fish stacked reef in both that panel and lower-frequency, color the bottom right.

Yes, I had to “sample” the verify what I thought I seeing on the screen. Sure a jig-and-teaser rig up several doubles of rockfish and perch, which quickly released from barbless hooks.



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At left, a yearling rockfish and an 8” white perch were two of the takers in the “resource assessment” of the Asquith Reef.

So did the same pattern hold elsewhere in the Severn? A quick visit to the Martins Pond Reef, at the mouth of Luce Creek., and to Capt. Pike’s Lump, a part of the larger Traces Hollow Reef just below the Rt. 50 Bridge, confirmed it. Same depth, same fish, same story. Restored reefs not only grow beautiful oysters, they create live bottom and fish habitat too!

So far, so good. Does the pattern work anywhere else in the Chesapeake? Well, answering that question would require a lot of “resource assessments,” but here’s another example.

A week later, CBF’s Maryland Media Coordinator, Tom Zolper, and I visited the Cooks Point Reef in

the lower Choptank, where Capts. Willey and Johannes, their volunteer crews, and members of the Dorchester Chapter of the Maryland Saltwater Sportfishing Association have been planting concrete reef balls set with spat (baby oysters) in an eight-acre area of natural oyster bottom over the past four years. We had with us Chris Knauss, a reporter from the Easton *Star-Democrat* who was writing a story about the reef ball project.

From the skiff, Chris and Tom took photos of *Patricia Campbell* at work.





Then they asked to go aboard the big boat, to watch the planting process close-up. I put them onboard, with the help of ace oyster restoration volunteer Lloyd Lewis, and headed off to another quadrant of the reef field to run a salinity/temperature/ dissolved oxygen profile. Like the Severn, this part of the Choptank was stratified, but it held more oxygen at deeper levels. The level at 7 meters (about 23 feet) was 5.3 mg/l, within the healthy range, but it dropped to 3.1 mg/l at 8 meters (26 feet).



A summertime dividing line in this depth range is common in many parts of the Chesapeake today. With this point in mind, most reefs that CBF and our restoration partners construct bottom out at 25 feet. Thus, the Cooks Point Reef lies in 18-25 feet, offering healthy water on this day.

Indeed, the sonar confirmed that prediction. The horizontal lines on both down-scanning screen panels at right indicate rockfish, and the sidescan panel at top left shows them to be directly under the boat. The arrow at bottom left displays the boat's position on the reef.



Yes, I had to sample this reef too. Fifteen minutes later, when Karl called on the VHF radio to say that Chris and Tom were ready to get back onto the skiff, there was a fat 19-inch rockfish in the fishbox.

In the interest of careful investigation, Chris wanted to see what the reef balls looked like underwater, so we rode over several that had already been planted, and we were not surprised to see rockfish there. In this image, two reef balls sit on the edge of a 15-foot lump on the surface of the Cooks Point Reef. Note the sonar marks of the fish beside them.



Exploring in a small circle around these reef balls, we were delighted to find the image below on the screen.



Look closely at the high-frequency screen panel (top right) and you'll notice that some of the fish marks are larger than others. These were 19-20-inch rockfish, one of which Tom hooked almost immediately. It joined the first in the fishbox. The smaller marks proved to be more of the puppy rockfish from the 2011 year class, plus big white perch.

We caught several of each, plus one more nice rock, while continuing to marvel at the pile of fish on the reef. Chris allowed that two rock and one good perch would fill the quota for his family's supper that day, so we gently released the rest without removing them from the water.

So what is the take-home message from this exercise? Again, it's that carefully restored reefs not only grow beautiful oysters, they create live bottom and fish habitat too. In summertime when the water is warm and dissolved oxygen all too often marginal, these reefs play crucial roles in providing the habitat our Chesapeake's fish need.

That message in turn leads to several more suggestions for Chesapeake anglers: ON THE WATER

- Learn where the reefs are and fish them.
- When you see fish on your boat's sonar that are grouped in a specific depth range, pay attention. They are telling you where they are most comfortable. Concentrate your "resource assessments" within that range.

BACK ON LAND

- To learn more about oyster restoration, visit the oyster section of the Chesapeake Bay Foundation's website, www.cbf.org/oysters and NOAA's Chesapeake Bay Office, <http://chesapeakebay.noaa.gov/oysters/oyster-reefs>.
- If you'd like to participate as a volunteer in CBF's oyster restoration programs in Maryland and Virginia, [cbf.org/oysters](http://www.cbf.org/oysters) can tell you how, at either of our Oyster Restoration Centers in Gloucester, VA or Shady Side, MD. And when you do, be sure to bring a notebook, so you can write down the locations of all the live bottom restoration reefs like Asquith and Cooks Point.



YOU CAN HELP

- Do you feel that there aren't as many fish and crabs as there used to be? Get angry. Recognize how much damage these dead zones do to the Chesapeake. They come from pollution--from all of us--and they rob the Bay's fish and crabs of around 50% of its water each summer!
- Learn what causes this pollution. One good place to begin is www.cbf.org. Click on the *Educate* tab on the home page and then on *Water Quality Issues*. You can also learn a lot from the web site of the Chesapeake Bay Program, www.chesapeakebay.net.
- Then dig into *The Clean Water Blueprint*, a series of articles on the left side of the cbf.org home page.
- Get involved in putting the Chesapeake's Clean Water Blueprint to work, to reduce the stress on our fish and crabs that pollution-driven oxygen depletion causes.
- The good news is that we're halfway there. **LET'S FINISH THE JOB!**

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