Exotic whelk found in Bay may pose threat to shellfish, oyster fisheries

By Karl Blankenship

A whelk that apparently hitched a ride to the Bay from Europe may be the latest problem for oysters and other shellfish.

Since it was first discovered during a Virginia Institute of Marine Science trawl survey in Hampton Roads last August, more than 400 veined rapa whelk have been turned over to VIMS researchers by commercial fishermen. Most were found in the lower James and Norfolk area, but one was picked up from as far away as the Rappahannock.

Scientists believe whelk larvae were transported to Norfolk from the Black Sea, or the Mediterranean — a major trading partner for the port — in ship ballast water. Roger Mann, a VIMS scientists studying the whelk, estimates the introduction took place several years ago, based on the large size of the whelks being found — 120-160 millimeters.

The species Rapana venosa, a native to the Sea of Japan, was introduced into the Black Sea in the 1940s, and later spread to the Aegean and Adriatic seas.

Their arrival in the Bay sparks worries because the rapa whelk is a major shellfish predator in other areas. In the Adriatic Sea, whelk larvae seemingly honed in on artificial reefs, and proceeded to feed and grow on the ample supply of oysters and mussels found on the them.

In the Black Sea, rapa whelks have proved to be tolerant to low oxygen conditions, water pollution and low salinities, and are thought to have caused the near extinction of several previously abundant shellfish species.

Right now, no one knows for sure if they are reproducing on their own in the Bay, though they have reproduced in the laboratory at VIMS. Egg cases have been recovered in the Chesapeake — a sign of potential reproduction — but no small whelks have been found.

But, Mann noted, most of the whelks examined so far have been turned in by fishermen who use gear designed to catch larger animals, so they would likely miss small whelks. It’s also possible that small whelks use different habitats than larger ones, he said.

“If it turns out that they don’t reproduce,” Mann said, “then this is just a transient problem that will just go away.”

If they persist, rapa whelks have the potential to wreak havoc over a large area, said Mann, who discussed its potential distribution with other scientists along the coast at a recent conference. “The consensus was that an eventual distribution from Cape Hatteras to Cape Cod was not out of the question,” he said.

Mann said the rapa whelk could spread through much of the Bay as well, although oyster beds in upper portions of Virginia rivers would likely be safe from the whelks.

If they become established, the whelks could be difficult to get rid of. “A full-grown one in excess of 6 inches long is a very substantial animal, and quite frankly, I cannot think of anything that would eat a big, full-grown rapa,” Mann said.

The rapa whelk releases lemon-colored egg cases that attach to hard substrates on the bottom. One problem with controlling them is that when the larvae emerge, they are able to swim freely.
"If this was a species that just crawled around, then you could draw a fairly tight reign around where you thought these things existed," Mann said. "If you have a planktonic larval stage that floats around, then the potential rate of dispersal is much quicker."

The potential range for the rapa whelk, and its ability to affect many native commercial species, points to the need for the federal government to play a larger role in combating nonnative species, Mann said.

"If the rapa breeds and gets out of the Chesapeake Bay and into the Middle Atlantic, it’s going to be a lot of states’ problem," he said. "So there needs to be some coordination at the federal level."

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