

Blue crab research may help Chesapeake Bay watermen improve soft shell harvest

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A research effort designed to prevent the introduction of viruses to blue crabs in a research hatchery could end up helping Chesapeake Bay watermen improve their bottom line by reducing the number of soft shell crabs perishing before reaching the market. The findings, published in the journal *Diseases of Aquatic Organisms*, shows that the transmission of a crab-specific virus in diseased and dying crabs likely occurs after the pre-molt (or 'peeler') crabs are removed from the wild and placed in soft-shell production facilities.

Crab mortality in soft shell production facilities is common, where it is typical for a quarter of all crabs to perish. Scientists attribute this high loss to the pressures crabs face as they are harvested, handled and placed in the facilities. When combined with the large number of animals living in a confined area, the potential for [infectious diseases](#) to spread among the crabs increases.

The team, led by University of Maryland Center for Environmental Science (UMCES) researchers, developed an innovative way to identify this crab virus solely by isolating its genetic material. Local watermen working in the soft-shell industry provided crabs to the Baltimore-based Institute of Marine and Environmental Technology (IMET) for examination.

In the laboratory, the researchers investigated the possible role of viruses in the soft shell crab's mortality by exploiting the unique physicochemical properties of the [virus genome](#), which consists of

double stranded RNA (distinct from the double stranded DNA that makes up crab and human genomes). They first extracted [nucleic acids](#) from potentially infected crabs then enriched virus genomes, allowing them to more easily find the virus. Once identified by its genome, the reo-like virus was later visualized by microscopy by collaborators at the NOAA Oxford lab.

"The [molecular tools](#) we developed during this study allow us to rapidly quantify prevalence of the [blue crab](#) reo-like virus in captive and wild crabs," said UMCES@IMET scientist Dr. Eric Schott. "The research shows that the virus was present in more than half of the dead or dying soft shell crabs we examined, but in fewer than five percent of healthy crabs."

"This new information opens the door to identifying the exact practices that help crab diseases spread," adds Schott. "That knowledge will allow us to work with watermen to develop new ways to prevent the spread of the virus, allowing them to bring more soft shells to market."

"Crab for crab, each soft shell crab we can get to market significantly increases our bottom line," said Lee Carrion of Coveside Crabs in Dundalk, Maryland. "With soft shells selling for five times the price of a hard shells, we have the potential to improve our profitability without increasing our total catch."

Throughout their research, scientists worked with watermen from Coveside Crabs to gather and collect samples for the study. Thanks to funding from the Maryland Department of Natural Resources, the team plans to continue the project this summer in an effort to proactively identify crabs carrying the virus, which poses no threat to humans, before they are brought into the soft shell production facility.

More information: The article, "Physicochemical properties of double-

stranded RNA used to discover a reo-like virus from blue crab
"Callinectes sapidus" appears in volume 93 of *Diseases of Aquatic
Organisms*.

Provided by University of Maryland Center for Environmental Science

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