

# ILLUMINATING

the Bay with a **SPARK**

By Alyssa Nolte

Once a thriving treasure of the mid-Atlantic ecosystem, the murky waters of the Chesapeake Bay have been troubled by pollution for most of the last century. Now, Northrop Grumman engineers are helping save one of the region's most valuable resources.



Through a SPARK Innovation Challenge, Northrop Grumman engineers have been tasked with developing a new method for monitoring the health of oysters in Chesapeake Bay. Oysters are essential to this estuary's well-being; they naturally filter water by feeding on algae in the bay and can provide a structured habitat for other aquatic species.

The Chesapeake Bay Foundation (CBF) is supporting a regional goal to plant and sustain 10 billion oysters in Chesapeake Bay by 2025. While this sounds simple, the bay's cloudy waters make it difficult to accurately monitor these oysters in an affordable way.

CBF's initial proposal sought experienced divers to monitor

progress using a cumbersome underwater apparatus. This labor-intensive method was not sustainable and would cost the foundation an average of \$7,000 a day. Martin Kozaczek, a local sailing enthusiast and Northrop Grumman program manager in Maryland, learned of CBF's goal and realized that the work he and his colleagues do, albeit in a different context, could help — and in a more cost-effective way, thanks to their innovative perspective.

Recognizing the opportunity to leverage company expertise to benefit the community, Martin and a team of Northrop Grumman experts submitted a proposal — CBF Grand Challenge — to SPARK, an internal innovation collaboration site where employees can submit their ideas and potentially earn funding to develop solutions.

"Innovation is a really big part of our culture at Northrop Grumman," said Martin. "As a member of the sector's innovation ecosystem, we do that through our technology challenges. Early last year, we were challenged to do something different — to come up with a larger, impactful problem to solve outside of our organization."


They proposed this grand challenge to develop a more efficient method of oyster reef monitoring using remote sensing systems, an area familiar to the company's highly skilled employees. The solutions developed by Northrop Grumman innovators will be able to capture images, map oyster reefs and collect data to assess the

health and development status of existing reefs and proposed future sites in the Chesapeake Bay.

Six engineering teams were chosen to go into the bay with CBF staff to see firsthand what the foundation is trying to accomplish. Last June, each team began prototype development and conducted lab testing. This eventually transitioned to on-the-water testing where engineers collected data and revised their methods.

Since a lot of their normal day-to-day work is classified, the engineers involved were delighted to finally share a little bit about what they do with their families. Artificial intelligence (AI) engineer and Tiderunners team member Ann Pitruzzello included a photo of her son with the prototype rover in her CBF Oyster Tech Showcase presentation. This was the first time her son could learn about something she does at Northrop Grumman.


"I've been involved in other innovation projects, and this CBF challenge is really impressive," Ann said. "It's great to see Northrop Grumman get fully behind this project that's not like our typical work with military customers."

In the next stages of the challenge, two of the four competing solutions will be chosen, then all engineers will work together to develop the final product. Northrop Grumman expects to deliver the final capability to the CBF by the end of the year and will continue collaboration with the foundation to refine the system. 

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—**MARTIN KOZACZEK**  
Program Manager

This effort to support the restoration of the bay's oyster population is a SPARK innovation initiative. You can follow the progress of the CBF Grand Challenge as well as submit your SPARK Challenge ideas on the Northrop Grumman intranet by visiting the SPARK Challenge website.

 Inset photo: Northrop Grumman engineers met with CBF scientists to fully understand their needs for a better oyster monitoring solution.

Photos by Michael Roe