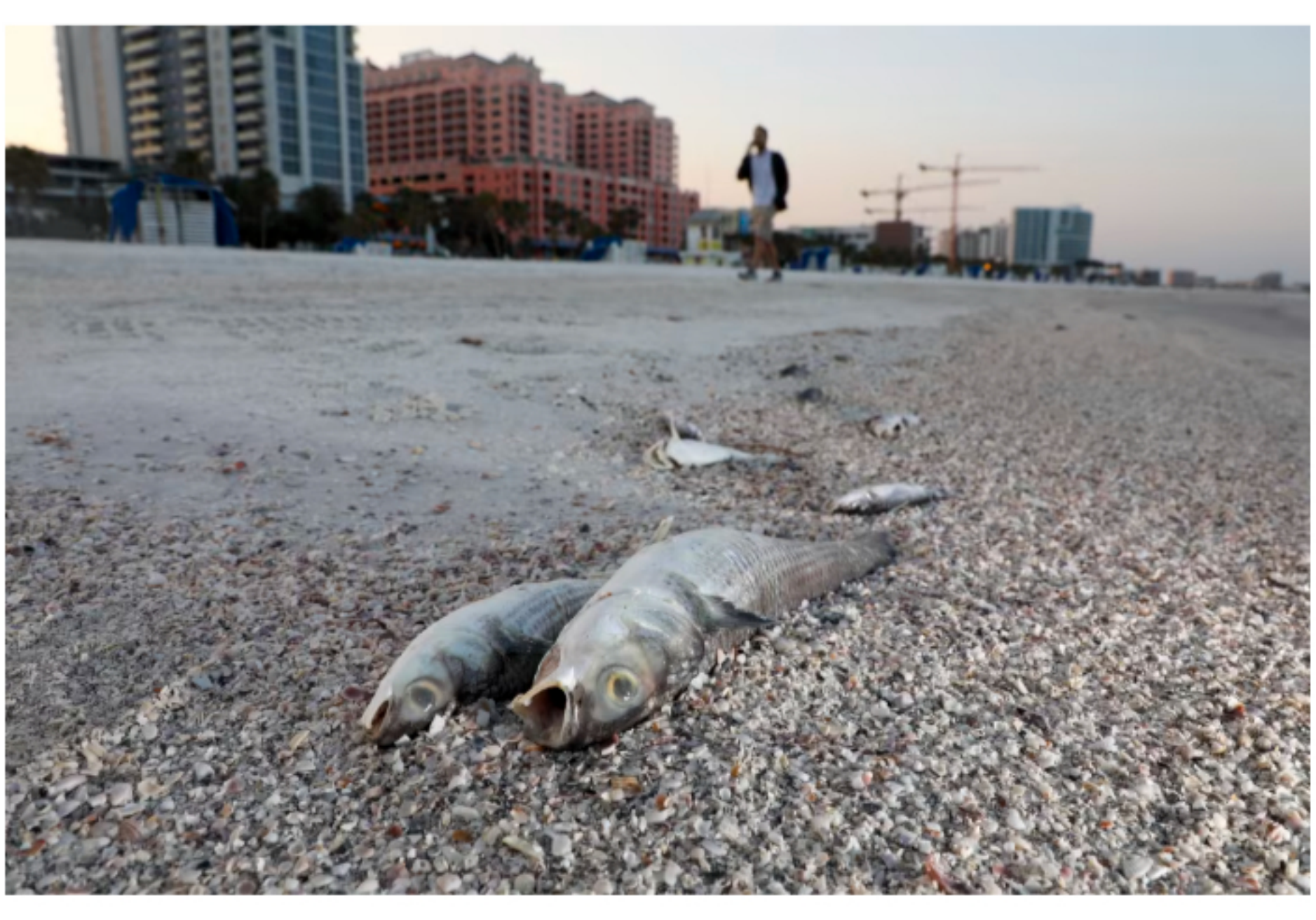
SUSTAINABLE BUSINESS

Water-Treatment Startup Sees Carbon Benefit in Harmful Algal Blooms

BlueGreen hopes to send slicks of toxic algae to the bottom of oceans and lakes, and generate carbon credits out of the stored biomass in the process

By *Perry Cleveland-Peck*

June 13, 2025 11:35 am ET | WSJ PRO



Dead fish on Clearwater Beach in Pinellas County, Fla., after a flare-up of the toxic red tide algae in 2023. PHOTO: DOUGLAS R. CLIFFORD/ASSOCIATED PRESS

An Israeli startup is rethinking how to tackle two of the planet's most stubborn environmental threats—toxic algae that can lead to dead zones in oceans and rising carbon levels.

BlueGreen Water Technologies is developing a novel approach to neutralizing harmful algal blooms, those vivid slicks of toxic plant life that can choke vast areas of sea and fresh water alike. In the process, it is also offering a potentially scalable new tool in the global effort to fight climate change.

Algal blooms aren't just a nuisance or a threat to wildlife, said Chief Executive Eyal Harel. They are a space where water pollution, biodiversity collapse and greenhouse gas emissions intersect. "What you're looking at in a bloom is an ecological coup d'état," he says. "One toxic species overruns an entire ecosystem, drives out competition and turns the water into a dead zone."

Harmful algal blooms, or HABs, occur when algae grow out of control, often triggered by nutrients entering the water, including fertilizer, sewage and industrial runoff. As the world warms up, some type of HABs are only going to become more common and the disruptions they cause to ecosystems will become increasingly hard to stop, experts warn.

"Harmful algal blooms can kill wild and farmed fish, make shellfish toxic to humans, deteriorate bathing water quality, cause mass mortality of marine life," said Henrik Enevoldsen, UNESCO expert on harmful algal blooms and program coordinator of the Intergovernmental Oceanographic Commission. "Their impact can be very serious, both economically and from a public-health perspective."

Harmful algal blooms occur when algae grow out of control. PHOTO: JOHN G MABANGLO/SHUTTERSTOCK

In South Australia, a toxic algal bloom stretching thousands of square miles has killed scores of more than 200 marine species in a monthslong environmental tragedy with no end in sight. On the U.S. Pacific Coast, hundreds of dolphins and sea lions were killed between Baja., Calif., and the Central Coast last year in one of the largest, longest and most lethal harmful algae blooms in Southern California's history. In the Bering Sea, HABs were linked to deaths of northern fur seals and fish that washed ashore on St. Paul Island, Alaska, last year, according to the National Oceanic and Atmospheric Administration.

The average annual economic impact of HABs in the U.S. is estimated at $10 million to $100 million, according to the National Centers for Coastal Ocean Science. HABs can deliver heavy economic blows to industries like fishing and when their effect on tourism in coastal states like Florida is factored in, damages can run into the billions.

BlueGreen's solution is neither a conventional pesticide nor a brute-force bleaching agent. It's a re-engineered formulation of hydrogen peroxide that floats on the water's surface and releases slowly—just enough to cause stress to the harmful algae but not enough to harm anything else. The aim isn't to kill the algae directly, but to trick it into activating a natural self-destruct mechanism known as programmed cell death.

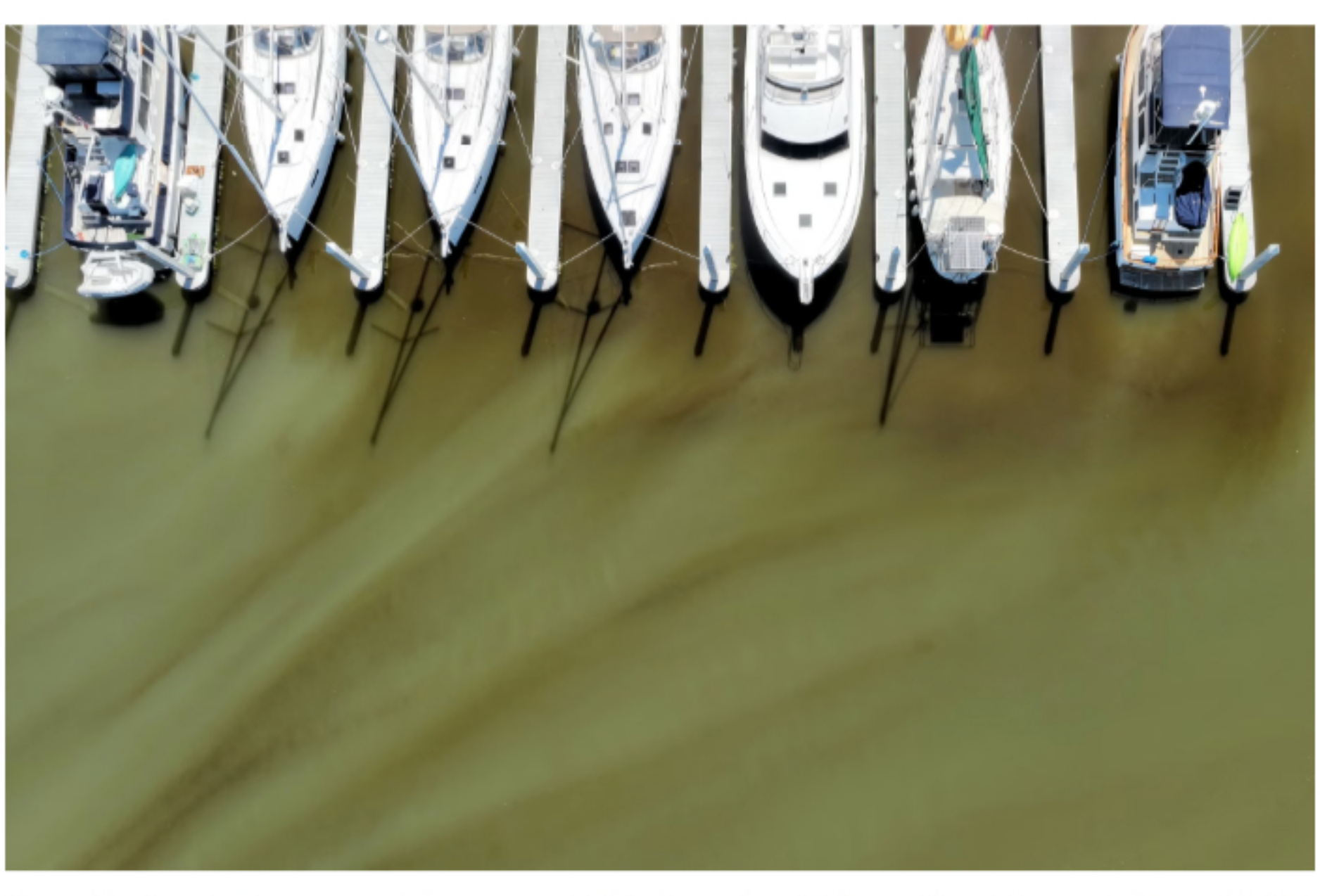
"The species we're dealing with have been around for billions of years. They invented photosynthesis. They're incredibly efficient at capturing carbon," Harel said. "But they also have built-in responses to hostile conditions. We just learned how to activate those responses selectively."

A California sea lion suffering from suspected poisoning caused by eating fish which ingested toxic algae is stranded on a beach in Oxnard, Calif. PHOTO: MARIO TAMA/GETTY IMAGES

When the treatment begins, the algae implode rather than explode—a critical distinction. Exploding cells release toxins back into the water. Imploding ones sink to the bottom, taking with them their toxins, nutrients—and carbon. Within days, nontoxic species reclaim the space, restoring biodiversity. "It's amazing when you give nature a fighting chance, how quickly it can rehabilitate itself," he said.

UNESCO's Enevoldsen said peroxide leaves no residue and when it is used to treat a bloom locally, is unlikely to have a lasting effect on an ecosystem. "On a larger scale, there may be effects, but it has not been tried yet. Scale is the question," he said.

BlueGreen says the process is also an effective way of sequestering carbon long term. Because algae are carbon storage units built by photosynthesis, the biomass they leave behind can be locked into sea- or lake-bed sediments for thousands of years, said Harel. "Water is the largest carbon sink on the planet," he said. "Organic carbon buried in aquatic sediments stays there."



Brownish streaks from an algal bloom are visible in the water at Ballena Bay in Alameda, Calif. PHOTO: JUSTIN SULLIVAN/GETTY IMAGES

This idea forms the basis of BlueGreen's carbon credit offerings. The company employs satellite imaging, water sampling and sediment coring to quantify how much biomass it removes and how much carbon it locks away. It uses this data to sell validated removal credits.

"We have a methodology registered with the Social Carbon Foundation that requires us to bring in a third-party validator to ensure that it's all analyzed, calculated, verified and certified correctly," said Harel.

BlueGreen, founded in 2014, is also developing a methodology to quantify methane and nitrous oxide reductions in rehabilitated water bodies. If successful, credits would be available in projects to prevent algal blooms forming in the first place. "We've done preventive projects where I'm not allowing the bloom to even pick up at all. I'm just intervening at an earlier stage," said Harel. "From an ecological perspective, I prefer to do a proactive treatment."

Last year, the company said it removed nearly 13,000 metric tons of carbon dioxide equivalent during its remediation of algal blooms in Utah's Mantua Reservoir in 2023. The company is in the process of treating a lake in Florida.

Scaling up is the next step—and Harel is looking to the oceans. BlueGreen is conducting trials to combat red tide, a type of algal bloom known for devastating sea life along the Florida coast, among other places. The company is collaborating with nonprofit research organization Mote Marine Laboratory and Aquarium in Florida to introduce a regulatory-approved large-scale solution to the problem.

"Red tide in a bad year can potentially cause over a billion dollars in damage to our various tourism and fisheries," said Cynthia Heil, senior scientist and director of Mote Marine Laboratory's Red Tide Institute. "The institute is tasked with developing mitigation technologies against red tide without further harm to the environment. We've had two projects with BlueGreen. Their compounds are very effective in both cells and toxins, so we're encouraged by that."

Harel said the company is currently waiting for the right conditions to do a first proof of concept exercise in the field in the Tampa Bay area. "Should it prove successful, the market is pretty much infinite," he said. "Damages in Florida from one single-year red tide event was calculated at $2.7 billion."

The BlueGreen CEO said that untold miles of oceans are subject to blooms with environmental, humanitarian and socioeconomic damage associated with them. "The only good thing these species do is take up carbon," he said. "They are photosynthetic machines that can double in biomass every couple of hours. That creates a lot of biomass that can lock in a lot of carbon."

Write to Perry Cleveland-Peck at perry.cleveland-peck@wsj.com

Corrections & Amplifications

Ballena Bay is in Alameda, Calif. A photo caption in an earlier version of this article misspelled the name as Bellena Bay. (Corrected on June 16)

Appeared in the June 14, 2025, print edition as 'Israeli Startup Sees Carbon Benefit in Harmful Algal Blooms'.

MUST READS FROM SUSTAINABLE BUSINESS

1. Microsoft Is Supercharging the Carbon-Removals Market. Amazon Thinks We Should Take it Slow. 
2. Standard Chartered to Sell Carbon Credits for Brazilian State Seeking to Protect Amazon 
3. Could a Global Minerals Trust Help Speed Up the Energy Transition? 
4. From Spongy Parks to Oyster Reefs, Investors Are Funding Ways to Adapt to Climate Change 
5. America Needs More Power. Its Warehouse Rooftops Could Provide the Solution.